

The Mining Journal

RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

No. 311.—VOL. XI.]

London: Saturday, August 7, 1841.

[PRICE 6D.

NOTICE.—THE SALE of IMPORTANT MINES, and SHARES in MINES, advertised to take place on Friday, the 8th day of July last, and subsequently postponed, is now appointed.

TO BE SOLD, BY PUBLIC AUCTION, on Tuesday, the 31st day of August instant, at the Trevarthian Mine account-house, in the parish of St. Hilary, Cornwall, at Three o'clock in the afternoon, upon such conditions, and in such lots, as shall be agreed on at the time of sale—

- All that MINE called PERRAN DOWNS, situate in the parish of Perranuthnoe, and the engine, machinery, and materials thereto belonging.
- All those MINES called ROSEVIDNEY and LITTLE ROSEVIDNEY, situate in the parish of Ludgvan, and the machinery and materials thereto belonging.
- All that MINE called WHEAL NEPTUNE, situate in the said parish of Perranuthnoe, and the machinery and materials thereto belonging.
- All that MINE called WHEAL CHARLOTTE, situate in the said parish of Perranuthnoe, and the machinery and materials thereto belonging.
- FOUR HUNDRED and EIGHTEEN 1200th SHARES in WHEAL FORTUNE MINE, situate in the said parishes of Ludgvan and St. Hilary, and the machinery and materials thereto belonging.
- SIX HUNDRED and TWENTY-FIVE 1200th SHARES in WHEAL FRIENDSHIP MINE, situate in the said parish of St. Hilary, and the machinery and materials thereto belonging.
- SEVEN HUNDRED 1200th SHARES in TREVARTHIAN DOWNS MINE, situate in the said parish of St. Hilary, and the machinery and materials thereto belonging.
- SEVEN HUNDRED and TWENTY-FIVE 1200th SHARES in WHEAL PROSPER MINE, situate in the said parish of St. Hilary, and the machinery and materials thereto belonging.
- All that MINE called WEST WHEAL BOLTON, situate in the said parish of Ludgvan, and the machinery and materials thereto belonging.
- EIGHT HUNDRED and TEN 1200th SHARES in OWEN VEAN MINE, and the engine, machinery, and materials thereto belonging.

The attention of capitalists and adventurers is invited to the foregoing mines, and shares in mines, which are held under leases, or sets, for the remainder of terms of twenty-one years, at very moderate dues, granted by the Duke of Lewis, Lady Carrington, and others, who, it may be confidently hoped, will extend their usual indulgence and support to all persons who may become purchasers. Owing to the embarrassments of the late proprietor, opera ions have not been carried on with the spirit which these mines certainly merit, but it is hoped that the opportunity of enlarging the workings, and thereby insuring large returns, will not be suffered to escape.

To inspect the mines, application must be made to the several resident agents and captains, and further particulars may be known on application to Capt. Wm. Richards, Redruth; or Messrs. Grylls and Hill, solicitors, Helston.

Dated Helston, August 2. WILLIAM PENBERTHY, Auctioneer.

VALUABLE COPPER AND LEAD MINES IN THE COUNTY OF MERIONETH.

TO BE SOLD, BY PRIVATE CONTRACT, all those the mines of copper and lead ore, and all other ore, metal and minerals, and useful earths in, upon, or under a farm, commonly called or known by the name of CWM HESIAN UCHA, situate and being in the parish of Llanlachry, in the county of Merioneth, and now or late in the occupation of Evan Jones. The above mines are held for the residue of a term of twenty-one years, of which upwards of sixteen years are unexpired, subject to the render or payment to the lessor of one ton in every nine tons of ore and other materials, washed, cleansed, and made merchantable, and subject also to the provisions usually inserted in leases of the like nature—together with the machinery set up and affixed for the said mines, consisting of an excellent water-wheel, 24 ft. in diameter, 4 ft. 6 in., connected by rods with a 7-inch pump in the perpendicular shaft, sundry mining implements, smith's shop, bellows, &c., &c. A considerable sum of money has been expended in developing the mines, which are believed to contain considerable quantities of valuable metal, especially lead ore. To the capitalist the present affords a good opportunity for investment, and immediate possession may be had, and sufficient ore may be raised to pay cost in a very short time. For further particulars application may be made to Mr. R. W. Byers, Tremadoc, or to Mr. Jesse, solicitor, Manchester.

VALUABLE MINE MATERIALS, Trembley Downs Mine, Gwennap, Cornwall.

TO BE SOLD, BY TENDER, an excellent 30-inch cylinder STEAM-ENGINE, with 12-ton boiler, balance box, capstan, shears, about 70 fathoms 9, 16, and 11-inch pumps, windlasses, working barrels, H-pieces, 120 fathoms 11-inch capstan rope, whale and other ropes, with a variety of MATERIALS, such as are usually found in a mine in full operation. The above are nearly all new, and well worthy the attention of mine agents and others.

For viewing the same, apply to Mr. Williams, at 23, Dunstanville-terrace, Falmouth; or, from eleven till three, daily, on the mine; and, for further information, to Messrs. Bull and Tilly, solicitors, Falmouth, to whom tenders, stating the highest price, in cash, for the whole, or any portion, must be sent, on or before the 10th of August next, shortly after which, the party whose tender may be accepted will have notice thereof.—Falmouth, Cornwall.

TO MINERS, ENGINEERS, COAL PROPRIETORS, &c.—A SUPERIOR STEAM-ENGINE AND BOILER FOR SALE.

TO BE SOLD, BY PRIVATE CONTRACT, a new 60-inch cylinder ENGINE, made by the celebrated founders, Messrs. Sandys, Carne, and Vivian, of Hayle Copper-house, Cornwall, together with a new boiler, 16 tons weight. The above are entirely new, and have never been used, the engine not having been completed; the parts requisite for this purpose are to be had at Messrs. Sandys, Carne, and Co. As it is intended to convert the above property into cash forthwith, an early application to Mr. Henry Burgess, of Truro, Cornwall, will be found desirable to purchasers.—Truro, Cornwall.

Also, several pumps, from 12 to 14-inch; plunger poles and water stamps, with 6 heads; 19-foot wheel—all of a superior quality; and a boiler about 7 tons.

TO CAPITALISTS.

TO BE DISPOSED OF, BY PRIVATE CONTRACT, a most important and highly-valuable PATENT for the kingdom of IRELAND, and for the whole unexpired term of the same, which is considerable. The invention claimed under this patent is a new principle of planing, in, perhaps, the most scientific and interesting department of the useful arts, referring to machinery, mines, manufactures, house and domestic purposes, agricultural and horticultural uses, railways, and canals; also to every application where the raising and conveying of fluids is required, carrying out in each at a less cost, a twofold or a thousandfold superiority of power. The patentee residing under his patent for England and Wales a demand twenty to one beyond his ability of supply, is the sole reason why the patent for Ireland is to be parted with. A liberal fortune may be realised within a few years.—Full particulars may be obtained on application (by principals only) to Mr. Joseph Johnson, iron merchant, Canning-chambers, north side Custom-house, Liverpool.

SHARE IN VALUABLE LEAD MINES.

TO BE DISPOSED OF, under an assignment for the benefit of creditors, ONE 16th SHARE in all those valuable LEAD MINES, situate and being in the Isle of Man, held under a lease from the Crown for an unexpired term of fourteen years, and extending over about 200 square miles of country, the whole of which is a mineral district. The mines are now producing about 250 tons of lead ore, rich in silver, per month, and which quantity is monthly on the increase; as several new and extensive veins have lately been discovered, and are now working upon—one in particular, in which the ore has been proved for a length of about 120 fathoms, and from three to four feet wide, nearly solid. The great Pentole vein, which has been at work for several years, and intersects the island from sea to sea, being about sixteen miles in length, is from twelve to eighteen feet wide, and in several places where it has been intersected by another vein, it has produced ore throughout the whole width, in ribs, varying from six inches to four feet wide, solid. The deepest mine on this vein is now seventy-three fathoms, and the ore as strong as ever it was on the bottom, thereby proving the bearing of the veins to a great depth. The mines are now making regular and large profits, and will be sold so as to pay the purchaser a handsome per centage for his money. The Crown never disturbs their mineral tenure, who work the mines effectively, as this company have done, and is now doing; there can be, therefore, no doubt about the renewal of the lease. The share, if required, will be subdivided, for the convenience of purchasers.

For further particulars, and to treat for the same, apply to Messrs. Roberts and Son, solicitors, Mold; or to Mr. William Jones, writing office, Chester.

TO be DISPOSED OF, by PRIVATE CONTRACT, a SMALL BRASS and IRON FOUNDRY, in full work, with the Millwright and Engineering departments. For further particulars, apply to Messrs. C. J. Jarratt and Co., West Bridge, Leek; Mr. T. Roberts, Phoenix-street, Nottingham; Mr. G. H. Weston, Irongate, Derby; or Mr. J. H. Davis, 6, Orange-road, Fleet-street, London.

TO IRONMASTERS, RAILWAY CONTRACTORS, COLLIER AGENTS, AND OTHERS.

MALLEABLE IRON RAILS.—The GREAT NORTH OF ENGLAND RAILWAY COMPANY propose to SELL, by PRIVATE CONTRACT, the following quantities of IRON RAILS and CHAIRS, viz.—25 tons of 20 ft. parallel bars; 50 tons of 20 ft. gauge rails; 12 tons of 6 ft. 6 in. rails; with 240 chairs, from 7 ft. to 4 ft. each, suitable to the above rails.—For further particulars apply to Henry Whitwell, of Burlington, the company's resident engineer.

TO RAILWAY COMPANIES AND IRON MANUFACTURERS.—LOSH, WILSON, and BELL, beg to recommend to parties EMPLOYING OR MANUFACTURING RAILS, their IMPROVED MACHINE for STRAIGHTENING RAILS, in which, by a simple and powerful application of the screw, the rail is rendered perfectly even, without being disfigured by hammer marks.—For terms and description apply to the makers.

Walker Iron Works, Newcastle, July 26.

BOLANOS MINING COMPANY.—DISSOLUTION OF INJUNCTION.—Brown & Baxton, &c., Lambeth, and others.—Notice is hereby given, that the injunction granted by His Honour the Vice-Chancellor, on the 28th day of April last, upon the application of John Brown, Esq., of 26, Chester-tower, Regent's-park, restraining the above defendants, as the directors of the Bolanos Mining Company, from "raising money in the manner mentioned in the resolutions of the 14th April, 1841, in the plaintiff's bill mentioned; and also from carrying on, or taking any steps or proceedings for the purpose of extracting, the said resolutions, or any of them, into effect, until the said defendants should fully answer the plaintiff's bill, or the court make other order to the contrary," was, on motion to that court, made this day on behalf of the defendants, dissolved.—Dated this 4th day of August, 1841.

MARTINEAU and MALTON, Solicitors for the defendants.

COMBMARTIN AND NORTH DEVON MINES.—THE GENERAL ANNUAL MEETING of the shareholders in the above concern will be held at the Mine, on Wednesday, the 18th day of August next, at Twelve o'clock at noon.

WILLIAM NEWTON, Secretary.

DE DUNSTANVILLE COPPER MINING COMPANY.—Notice is hereby given, that a CALL of TEN SHILLINGS per share was this day made by the Directors on the shareholders of the above mine, to be paid on or before the 24th August next, at this office.

W. H. ASHURST, 127, Cheapside, London, Solicitor for several shareholders.

By order, RICHARD PURDY, Secretary.

TREGOLLAN MINING COMPANY.—The directors of this company give notice, that, in pursuance of the authority vested in them by the resolution of a Special General Meeting of shareholders, held on the 14th day of October last, they hereby CALL for the further sum of TEN SHILLINGS per share, on account of the capital of this company, payable by two instalments of Five Shillings each, the first to be paid on or before Monday, the 10th day of August next, at the London and Westminster Bank, Lombard-street, and the second on or before Thursday, the 30th day of September next, at the same place.

By order of the board of directors, SAMUEL BUXTON, Secretary.

TREGOLLAN MINING COMPANY.—TREASURER.

TALACRE COAL AND IRON COMPANY.—TEN POUNDS REWARD will be PAID to any person who will DELIVER the ORIGINAL MINUTE BOOKS, kept in London, or, on behalf of, this company, prior to Oct. 1840, and the LETTER BOOK of the company prior to the 31 of June, 1840.

W. H. ASHURST, 127, Cheapside, London, Solicitor for several shareholders.

By order, HENRY MOLYNEUX, Secretary.

TALACRE COAL AND IRON COMPANY.—IT is requested that any persons, who have purchased or advanced upon shares in this company, purporting to have had paid up on account of, and, have been called PAID-UP SHARES, will communicate to Mr. W. H. Ashurst, solicitor, 127, Cheapside, London, what shares they hold, and the circumstances and representations under which they were sold or pledged.—W. H. ASHURST, 127, Cheapside, London, Solicitor for several shareholders.

WHEAL HENNOCK AND CHRISTOW MINING COMPANY.—Notice is hereby given, that all shares on which the call of 7s. 6d. per share, made the 20th of May last, is NOT PAID, on or before the 10th September next, will be absolutely FORFEITED.

By order of the directors, HENRY MOLYNEUX, Secretary.

Jubilee buildings, 16, Lord street, Liverpool, August 2.

THE PATENT SAFETY FUSE, FOR BLASTING ROCKS IN MINES, QUARRIES, AND FOR SUBMARINE OPERATIONS.—This article affords the safest, cheapest, and most expeditious mode of effecting this very hazardous operation. From many testimonies to its usefulness with which the Manufacturers have been favoured from every part of the kingdom, they select the following letter, recently received from John Taylor, Esq., F.R.S., &c., &c.—

"I am very glad to hear that my recommendations have been of any service to you. They have been given from a thorough conviction of the great usefulness of the Safety Fuse, and I am quite willing that you should employ my name as evidence of this."

Manufactured and sold by the Patentees, BICKFORD, SMITH, and DAVEY, Camborne, Cornwall.

TO CAPITALISTS.

TO BE DISPOSED OF, BY PRIVATE CONTRACT, a most

important and highly-valuable PATENT for the kingdom of IRELAND, and for the whole unexpired term of the same, which is considerable. The invention claimed under this patent is a new principle of planing, in, perhaps, the most scientific and interesting department of the useful arts, referring to machinery, mines, manufactures, house and domestic purposes, agricultural and horticultural uses, railways, and canals; also to every application where the raising and conveying of fluids is required, carrying out in each at a less cost, a twofold or a thousandfold superiority of power. The patentee residing under his patent for England and Wales a demand twenty to one beyond his ability of supply, is the sole reason why the patent for Ireland is to be parted with. A liberal fortune may be realised within a few years.—Full particulars may be obtained on application (by principals only) to Mr. Joseph Johnson, iron merchant, Canning-chambers, north side Custom-house, Liverpool.

SHARE IN VALUABLE LEAD MINES.

TO BE DISPOSED OF, under an assignment for the benefit of creditors, ONE 16th SHARE in all those valuable LEAD MINES, situate

and being in the Isle of Man, held under a lease from the Crown for an unexpired term of fourteen years, and extending over about 200 square miles of country, the whole of which is a mineral district. The mines are now producing about 250 tons of lead ore, rich in silver, per month, and which quantity is monthly on the increase; as several new and extensive veins have lately been discovered, and are now working upon—one in particular, in which the ore has been proved for a length of about 120 fathoms, and from three to four feet wide, nearly solid. The great Pentole vein, which has been at work for several years, and intersects the island from sea to sea, being about sixteen miles in length, is from twelve to eighteen feet wide, and in several places where it has been intersected by another vein, it has produced ore throughout the whole width, in ribs, varying from six inches to four feet wide, solid. The deepest mine on this vein is now seventy-three fathoms, and the ore as strong as ever it was on the bottom, thereby proving the bearing of the veins to a great depth. The mines are now making regular and large profits, and will be sold so as to pay the purchaser a handsome per centage for his money. The Crown never disturbs their mineral tenure, who work the mines effectively, as this company have done, and is now doing; there can be, therefore, no doubt about the renewal of the lease. The share, if required, will be subdivided, for the convenience of purchasers.

For further particulars, and to treat for the same, apply to Messrs. Roberts and Son, solicitors, Mold; or to Mr. William Jones, writing office, Chester.

TO be DISPOSED OF, by PRIVATE CONTRACT, a SMALL

BRASS and IRON FOUNDRY, in full work, with the Millwright and

Engineering departments. For further particulars, apply to Messrs. C. J. Jarratt and Co., West Bridge, Leek; Mr. T. Roberts, Phoenix-street, Nottingham; Mr. G. H. Weston, Irongate, Derby; or Mr. J. H. Davis, 6, Orange-road, Fleet-street, London.

TO IRONMASTERS, RAILWAY CONTRACTORS, COLLIER AGENTS, AND OTHERS.

MALLEABLE IRON RAILS.—The GREAT NORTH OF

ENGLAND RAILWAY COMPANY propose to SELL, by PRIVATE CONTRACT, the following quantities of IRON RAILS and CHAIRS, viz.—25 tons of 20 ft. parallel bars; 50 tons of 20 ft. gauge rails; 12 tons of 6 ft. 6 in. rails; with 240 chairs, from 7 ft. to 4 ft. each, suitable to the above rails.—For further particulars apply to Henry Whitwell, of Burlington, the company's resident engineer.

BOLANOS MINING COMPANY.—DISSOLUTION OF INJUNCTION.—Brown & Baxton, &c., Lambeth, and others.—Notice is hereby given, that the injunction granted by His Honour the Vice-Chancellor, on the 28th day of April last, upon the application of John Brown, Esq., of 26, Chester-tower, Regent's-park, restraining the above defendants, as the directors of the Bolanos Mining Company, from "raising money in the manner mentioned in the resolutions of the 14th April, 1841, in the plaintiff's bill mentioned; and also from carrying on, or taking any steps or proceedings for the purpose of extracting, the said resolutions, or any of them, into effect, until the said defendants should fully answer the plaintiff's bill, or the court make other order to the contrary," was, on motion to that court, made this day on behalf of the defendants, dissolved.—Dated this 4th day of August, 1841.

MARTINEAU and MALTON, Solicitors for the defendants.

COMBMARTIN AND NORTH DEVON MINES.—THE GENERAL ANNUAL MEETING of the shareholders in the above concern will be held at the Mine, on Wednesday, the 18th day of August next, at Twelve o'clock at noon.

WILLIAM NEWTON, Secretary.

DE DUNSTANVILLE COPPER MINING COMPANY.—Notice is hereby given, that a CALL of TEN SHILLINGS per share was this day made by the Directors on the shareholders of the above mine, to be paid on or before the 24th August next, at this office.

W. H. ASHURST, 127, Cheapside, London, Solicitor for several shareholders.

By order, RICHARD PURDY, Secretary.

TALACRE COAL AND IRON COMPANY.—TEN POUNDS REWARD will be PAID to any person who will DELIVER the ORIGINAL MINUTE BOOKS, kept in London, or, on behalf of, this company, prior to Oct. 1840, and the LETTER BOOK of the company prior to the 31 of June, 1840.

W. H. ASHURST, 127, Cheapside, London, Solicitor for several shareholders.

By order, HENRY MOLYNEUX, Secretary.

Jubilee buildings, 16, Lord street, Liverpool, August 2.

THE PATENT SAFETY FUSE, FOR BLASTING ROCKS IN MINES, QUARRIES, AND FOR SUBMARINE OPERATIONS.—This article affords the safest, cheapest, and most expeditious mode of effecting this very hazardous operation. From many testimonies to its usefulness with which the Manufacturers have been favoured from every part of the kingdom, they select the following letter, recently received from John Taylor, Esq., F.R.S., &c., &c.—

"I am very glad to hear that my recommendations have been of any service to you. They have been given from a thorough conviction of the great usefulness of the Safety Fuse, and I am quite willing that you should employ my name as evidence of this."

Manufactured and sold by the Patentees, BICKFORD, SMITH, and DAVEY, Camborne, Cornwall.

TO CAPITALISTS.

TO BE DISPOSED OF, BY PRIVATE CONTRACT, a most

important and highly-valuable PATENT for the kingdom of IRELAND, and for the whole unexpired term of the same, which is considerable. The invention claimed under this patent is a new principle of planing, in, perhaps, the most scientific and interesting department of the useful arts, referring to machinery, mines, manufactures, house and domestic purposes, agricultural and horticultural uses, railways, and canals; also to every application where the raising and conveying of fluids is required, carrying out in each at a less cost, a twofold or a thousandfold superiority of power. The patentee residing under his patent for England and Wales a demand twenty to one beyond his ability of supply, is the sole reason why the patent for Ireland is to be parted with. A liberal fortune may be realised within a few years.—Full particulars may be obtained on application (by principals only) to Mr. Joseph Johnson, iron merchant, Canning-chambers, north side Custom-house, Liverpool.

SHARE IN VALUABLE LEAD MINES.

TO BE DISPOSED OF, under an assignment for the benefit of creditors, ONE 16th SHARE in all those valuable LEAD MINES, situate

and being in the Isle of Man, held under a lease from the Crown for an unexpired term of fourteen years, and extending over about 200 square miles of country, the whole of which is a mineral district. The mines are now producing about 250 tons of lead ore, rich in silver, per month, and which quantity is monthly on the increase; as several new and extensive veins have lately been discovered, and are now working upon—one in particular, in which the ore has been proved for a length of about 120 fathoms, and from three to four feet wide, nearly solid. The great Pentole vein, which has been at work for several years, and intersects the island from sea to sea, being about sixteen miles in length, is from twelve to

LAW INTELLIGENCE.

LIABILITY OF SHAREHOLDERS—JUDGMENT.

COURT OF REVIEW—JULY 30.

EX PARTE WOOD, IN RE WEBSTER, A BANKRUPT.—Sir J. Clegg stated this to be a petition by a joint creditor, for himself and others, stating a surplus of £6000, after payment of separate creditors in full, and praying a declaration entitling the joint creditors to dividends out of this surplus fund. The bankrupt had the misfortune to be a partner in a joint-stock banking company, assuming the high-sounding name of the Imperial Bank of England, which has since failed, and not less than forty shareholders have been subsequently made bankrupts, including all the directors of the company except one. This bankrupt had paid up all his shares, and had a balance of £3000, lying in the bank at the date of its failure. His private creditors had all been paid in full, and the surplus was now claimed in discharge of the debts of the bank. It was contended by the executor of the deceased bankrupt, that the joint creditors were not entitled to the benefit of this fund, though it did not appear that he claimed it for himself, but merely suggested a question with which the representative had nothing whatever to do. There was no ground showing a distinction between a partnership of many and the partnership of a few, the same laws and principles were applicable to both, and where joint debts existed the surplus must go in payment of those debts, after satisfaction of the separate creditors. In "Ex parte Reid" (9 Vesey), Lord Eldon decided that similar surplus fund should not go to pay interest to separate creditors, but should be appropriated towards bringing joint creditors on an equality. He was, therefore, of opinion, that the petitioner was entitled to his order, as prayed.—Costs of petitioner and assignee out of estate.

CORNWALL MINING SPECULATIONS.

COURT OF BANKRUPTCY—AUGUST 6.

IN THE MATTER OF T. S. CAVE.—This bankrupt appeared in Court on his adjourned examination. The liabilities upon the estate were said to be very large, but their amount was not as yet ascertained. The assets were also described as considerable, the bankrupt having been the proprietor of the mines in Cornwall known as the Trevorthian Downs, the Owen Vein, the Rospath, the Wheal Fortune, and the Wheal Prosper Mines, which had been advertised for sale on the 12th inst., and upon which it appeared in his balance-sheet the profit and loss account, including capital and expenses, amounted to £97,793.

Mr. Nias, who appeared as solicitor for a number of the creditors, wished to submit to the learned commissioner whether, under all the circumstances of the case, it would not be better to give them a private meeting, as (Mr. N.) was desirous of examining the bankrupt, as well as other parties. There were many points connected with the case which required a deliberate inquiry, which could be only considered properly at a private meeting; and, therefore, at whatever time it suited the convenience of the learned commissioner to adjourn, whether to a week, a fortnight, or a month, all parties would best consult their own interest by postponing the sale of the bankrupt's mining property, and having a private meeting.

Mr. Cave said whatever time might be appointed by the court would satisfy him, as his sole object was to render all the accommodation in his power to every one interested in the fact.

Mr. Nias, on the part of those whom he represented, said that so far as the proceedings had at present gone, he felt bound to express his approbation, and also to state that the course now proposed would be a benefit to Mr. Cave himself.

After some further conversation between the learned Commissioner and the solicitor, it was ultimately determined to fix the day of adjournment on Monday, the 1st of November next.

NEW PATENTS FOR JULY.

Moses Pool, gent., Lincoln's Inn, for improvements in producing and applying heat—being a communication.

William Losh, Esq., Little Beaton, Northumberland, for improvements in the manufacture of railway wheels.

George Henry Phipps, engineer, Deptford, for improvements in the construction of wheels for railway and other carriages.

George Onions, engineer, High-street, Shoreditch, for improved wheels and rails for railroad purposes.

Robert Mallat, engineer, Dublin, for certain improvements in protecting cast and wrought-iron, and steel, and other metals from corrosion and oxidation; and in preventing the fouling of iron ships, or ships sheathed with iron, or other ships, or iron buoys, in fresh or sea water.

William Edward Newton, civil engineer, office of patents, Chancery-lane, for certain improvements in the manufacture of fuel—being a communication.

Charles Wheatstone, gent., Conduit-street, for improvements in producing, regulating, and applying electric currents.

Benjamin Beale, engineer, East Greenwich, for certain improvements in engines, to be worked by steam, water, gas, or vapours.

Andrew Smith, engineer, Helper, for certain improvements in the arrangement and construction of engines to be worked by the force of steam or other fluids; which improved engines are also applicable to the raising of water or other liquids.

John White Welch, merchant, Austinfriars, for an improved reverberatory furnace, to be used in the smelting of copper ore or other ores which are or may be smelted in reverberatory furnaces.

Anthony Bernhard Von Rathen, engineer, Kingston-upon-Hull, for improvements in high-pressure and other steam-boilers, combined with a new mode or principle of supplying them with water.

Anthony Bernhard Von Rathen, engineer, Kingston-upon-Hull, for a new method or methods (called by the inventor "The United Stationary and Locomotive System,"¹³) of propelling locomotive carriages on railroads and common roads, and vessels on rivers and canals, by the application of power produced or obtained by means of machinery and apparatus unconnected with the carriages and vessels to be propelled.

SPECIFICATIONS OF RECENT PATENTS.

[From the *Inventor's Advocate*.]

Edward Ford, machinist, Queen's Head-lane, Islington, for an improved method or improved methods of supplying fuel to the fire-places or grates of steam-engine boilers, brewers' copper, and other furnaces, as well as to the fire-places employed in domestic purposes, and generally to the supplying fuel to furnaces or fire-places in such a manner as to consume the same generally produced in such furnaces or fire-places. July 16.—This invention consists of improvements in these fire-places in which the fuel is fed from beneath. It is applied to the furnaces of stationary steam-engines in the following manner.—Under the centre of the fire-grate and opening at the top into the same is a quadrangular chamber called the coking chamber, containing a piston which fits its interior, and is raised or lowered within the same by means of rocks and pins; in the front of the chamber is a door, through which coal may be thrown on to the piston, and the top of the chamber is provided with a sliding plate, also moved by rocks and pins, which may at any time be slid forward to cover the mouth of the same.

The following is the mode of working this furnace.—A fire having been made in the furnace, the piston, on which a supply of coals has previously been placed, is gradually raised at intervals until it reaches the top of the chamber, the supply of coals on it having been consumed; the sliding plate is now moved over the mouth of the chamber, between the burning rocks and the piston, thereby serving as a support to the first, and the piston is lowered to the bottom of the chamber. The door of the chamber is now opened, a supply of coals placed on the piston, and the door again closed, after which the piston is raised a little, in order that the rocks on it may support the burning fuel over the mouth of the chamber, when the sliding plate is withdrawn, which is now done, and the piston is gradually raised at intervals until its present supply of fuel is consumed.

A slight modification of the above is shown, in which a temporary plate is used instead of the sliding plate. The temporary plate is placed on the piston, and the supply of coals thrown on the same; the piston is then raised until it reaches the top of the chamber, when the ends of four spring levers project into the chamber beneath the temporary plate and support the same; the piston is now lowered, and receives a fresh supply of coals, another temporary plate being first placed on it; it is then raised a little as above mentioned, and a small door in the upper part of the chamber being opened, the upper temporary plate which supported the burning coals is withdrawn by means of a hook or other convenient instrument. This invention is applied in the same manner to any other fire-places or furnaces.

Claim first.—The application of a door to the chamber or coking oven, to facilitate the supplying fuel thereto.

Claim second.—The mode of supporting the fuel by means of the plate or piston, when the plate or piston is used in combination with a piston and chamber or oven, such as are herein described.

Claim third.—The mode of applying a temporary plate working within the chamber or coking oven as described.

PURE WATER ON RAILWAYS.—For some time a number of men have been employed in the erection of filters on the top of the terraces on the Greenwich Railway, for the purpose of supplying the engines with pure water, it having been discovered that the water hitherto used had occasioned considerable injury to the machinery. There are also similar filters erected at the New Cross station, on the Croydon line.

BRISTOL AND GLOUCESTERSHIRE RAILWAY.—The works on this line are proceeding rapidly in the neighbourhood of Winklow, where 600 additional labourers have been put on this work.—*Stock Journal*.

MINING CORRESPONDENCE.

ENGLISH MINES.

HOLMBUSH MINING COMPANY.

Aug. 2.—I beg leave to inform you, that in the 110 fathom level south the ground is hard, and much intersected with rich branches of copper ore; we expect the lode will be met with by the end of the present week. The lode in the 100 fathom level, east of James's winze, is eight inches wide, ore throughout, but not rich. The lode in the winze, below this level, is one foot wide, composed of sandstone and spar, intersected with ore. The rise, in the back of this level, is holed to the winze in the bottom of the ninety, in which the lode has been very productive, from eighteen to twenty inches wide, and worth about 28d. per fathom. In the ninety fathom level west, and slopes in back of ditto, no lode taken down during the past week. The lode in the slopes, in the back of the 100 fathom level, is still a rich course of ore, two feet wide, and worth 40d. per fathom. The cross-cut to the south lode, at the ninety fathom level, is progressing in favourable ground. The lode in the eighty fathom level, east is one foot wide, producing a small proportion of ore. The rise in the back of this level is at present in easy ground. The lode in the western slopes, in back of ditto, is two feet wide, and worth 40d. per fathom. The lode in the seventy fathom level slopes is sixteen inches wide, and worth 27d. per fathom. The Flap Jack lode, in the seventy fathom level east, has been taken down for about two feet wide, but we are not as yet through it; the lode apparently continues large, and more promising than for some time past, producing at present rich stones of copper ore. Tribute pitches, and other places in the mine, much as last reported. We weighed on Friday last June ores, 215 tons, and sampled July ores, computed 213 tons, of good quality.

F. PHILLIPS.

year which the gold was found. The vein continued favourable the next day, the total produce of which was constituted by an arched in the back of the seven fathoms level at Allcock's, which arch gave on the very next day upwards of 25 lbs. Both of these pieces have since been unproductive, partly from the effect of timbering, which has prevented further working on the vein, and partly from their own actual state of poverty. These discoveries are, however, cheering, and seem to mitigate the intrusion of despondency which lengthened ill success cannot but admit, but which, however, may be looked upon as premature when the unexplored extent of this mining field is considered.

G. V. DUVAL.

Gold produce from 1st to 12th May, 80 lbs. 9 oz. 4 dwt.—Total, from 1st January to 12th May, 251 lbs. 9 dwt.

May 10.—Since the commencement of this month we have obtained a very good produce of gold from the vein in the back of Tippett's level, west of Bennett's shaft, and we have the pleasure to state that this day we met with a very good vein in an arch over the seven fathoms level, east of Allcock's shaft, which has produced upwards of 26 lbs. of gold. The remainder of the produce to-day was obtained at the back of Tippett's level. The shallow level, west of Blamey's shaft, is holed to the cross-cut driven south from Pengeley's shaft. We have commenced to drive a level in the mountain north-west of Morgan's shaft; this is intended to explore the Peak mountain at a higher horizon than any of our present underground workings.

N. HARRIS.

THOS. BLAMEY.

THOS. PENGELEY.

V. VON HELMREICHEN.

BRAZILIAN COMPANY.

Caia Branca, May 19.—One sick list, from the cold weather, is large, and the children are the principal sufferers.

May 30.—The gold report for the last week is low; this is to be attributed to our having, in the early part of the week, broken the set of connecting the rods of the sinking lift, which, by allowing the water to rise over the bottoms during the time it took to repair it, prevented our working the bottom slopes during the remainder of the week. All is now right again, but the little advantage which our engine has over the coming water makes it necessary that a greater power should be got ready as soon as possible, which shall be done; much of the wheel is already in. I availed myself of the mine being in fork yesterday to examine every part minutely. Respecting the eastern ground, I can add nothing to what I last stated, having scarcely worked there since. The Olho Minor shows a little widening, and a little better-natured looking stone. West of the "gut" the lode is still gradually and regularly opening, and nearly every part looks very well. The Olho Fino, which we are just entering, shows rich, and I only hope that no accident may happen for the next two or three weeks to the pumps, that we may see how far the produce will bear out its good appearance. Our surface works are getting on apparently very slowly, but in reality as fast as I can reasonably expect. The smith's work keeps us back. No. 1 stamping-engine will now soon be ready to commence duty—that is, the west side—and I hope will not be long in making up for the labour and expense which it cost.

Gold return for three weeks to 28th May, 45 lbs. 6 oz. 1 dwt. 14 grs.

W. COTESWORTH.

ST. JOHN DEL REY MINING COMPANY.

Morro Velho, May 8.—Produce for April is 5927 oits., which, under present circumstances, is better than we anticipated; the quantity stamped out than the preceding months, being 343 oits. per ton all round.

Reduction Report.—The stamps have done somewhat less duty than in March. The water is lower in the regas. The Champion stone, treated separately, shows an improvement, having yielded 25 oits. per ton. That from the United Mines, deducting the forty-eight tons Champion stone, gives 408 oits. per ton. Loss of mercury 20-39 lbs.

Mine.—The Bahia sump was sunk 1 ft. 4 in. up to the end of the month. Breakages at the engine have, as usual, caused interruption; arrangements will be completed next week by the chief mechanic for remedying this evil, and we have little doubt of getting down at the rate of six feet per month, if not more, with the sump both in Bahia and Gamba. The west end of Chambina mine has been driven two feet, and shows very fair stone. In the winze a great deal of ore has been broken, which for want of drawing power has accumulated on the slopes. To morrow the necessary work will be completed, and enable us, by putting another kibble into play, to get a large quantity of stuff, from which much good ore for the stamp will be picked. In the Gamba very little has been done towards getting down the ground for sinking. The timber-work here is very heavy; by the end of next week we shall make a beginning with the sump, and push it with all speed.

UNITED MEXICAN MINING ASSOCIATION.

Guazamato, May 17.—I beg the usual reference to the enclosed duplicate of my last letter to the court, dated the 16th ult., and of the inclosures referred to therein, and, at the same time, to hand to you herewith the following documents in original, &c., &c., &c.:

Mine of Rayas.—The unfavourable report of the produce of this mine, made to the court by me for some time past, I regret to add, must be repeated on the present occasion, inasmuch as there is no improvement whatever in the several workings of Purisima, San Cayetano, and San Miguel; but, rather on the contrary as respects the value of the picked ores—these, although somewhat more abundant, but, being accompanied by extraneous metals, and prejudicial to the reduction by patio, incurring a heavier expense than usual in extracting the silver, as well as a greater loss of mercury. This character of ore has never been met with before to such an extent, and, in default of others, form, unfortunately, the bulk of our present extraction, San Cayetano being the point of produce, while the better and more delicate class of Purisima has fallen off to sixty or seventy cargas per week; we are endeavouring to get beyond this portion of the vein, in the hope of meeting better and more favourable ore, but without success, thus far, in any one point. The quantity of picked ores produced in the four weeks ending the 8th instant has been 2016 cargas, or 504 cargas weekly, and the amount of sales of ores on joint account with buscones, of which there have been four during the same period, has reached \$13,369 4, or \$3339 7 per week; the estimate of the former, together with the mine's share of the latter, does not, however, cover the expenses of the mine, and the reduction of the ore (for the four weeks), by \$1200, or \$300 weekly. This discouraging aspect of affairs at the mine will, I hope and repeat, operate not only as an inducement to the owners to enter into a new contract with the association, but also be the means to secure the contract on corresponding and more favourable terms. Nothing whatever had been effected, however, in this respect since my last letter to the court.

City of Mexico, June 7.—With regard to the general appearance and produce of the various workings of the mine, no favourable change has shown itself since my last report thereon, or rather up to the 4th inst., the date of the last communication from Mr. Giesau, and received to-day; the produce of Purisima is lower than usual, but of a better quality. That of San Cayetano continues very poor, especially from the advanced points, which is discouraging, having expected some early improvement in them or others. In the direction of San Miguel there is no better result nor prospect, the produce from them continuing small and poor.

Haciendas.—For the sake of simplifying the accounts at the head office, and other considerations of a local nature, the grinding of bought ores will henceforth be carried on exclusively at Barrera, instead of dividing those ores between the haciendas and San Matias, as heretofore—the latter to be employed on Rayas ores; these two haciendas are, therefore, now employed as follows, viz.—Barrera, on bought ores, thirty-four arrestrates; ditto, on Rayas ores, thirty-four—sixty-eight; San Matias, on Rayas ores, twenty arrestrates—making, between the two, fifty-four arrestrates on Rayas ores, which are six arrestrates more than for some time past, and lessening those on bought ores by the same number. The hacienda of Dolores is still employed on the contract with Mr. Wiseman.

May 17.—**Remittances.**—The succeeding Tampico contracts from hence will leave in about six weeks, but it is impossible, at this distance of time, to name any amount, if any, which may be spared from my ways and means, as a further remittance to the directors.

June 7.—**Remittances.**—I am extremely glad to hear, that, in consequence of the receipt of remittances, the directors had declared a payment of 20 per cent. on the red scrip, or new shares raised in 1881. As stated in my last letter to the court, the next Tampico contracts will leave Guanajuato the beginning of the next month, and by it I hope to be enabled to make a further remittance to the court, the amount of which will be regulated by the extent of my ways and means at the time, and which it is difficult to estimate at the present moment, owing to the previous returns from the haciendas, on the eve of the commencement of the rainy season, but the directors may rest assured, that the amount of such remittance will be as large as circumstances will permit.

J. N. SHOOLBROOK, Manager.

Report on the State of the Workings of the Mine of Sapo.

May 13.—**La Purisima.**—The end of Santa Victoria is producing a very small quantity of the more ordinary classes of ore. The pit of Pilas has been suspended, the ore having failed, and the lode having been worked out all round. No variation has taken place in the end of Santa Margarita. From the pit of San Hermoso some narrow threads of good quality have been met with, amongst the ores extracted—but these are rather scarce. Nine pairs of hammers are employed by day only, and the weekly produce of ore, in its rough state, has averaged 140 cargas, which, when picked, have yielded 25 cargas, calculated to be worth \$1000, exclusive of reduction expenses.

San Cipriano.—The end to the south-east of the roof of this mine, and the roof in the Cañon do los Cañones, being very unproductive, and offering no prospect of improvement, the workmen have been removed to the roof of Purisima, on the north-west side of the upper workings of San Cayetano, and at the point of communication between these workings and the Cañon do

FOREIGN MINES.

IMPERIAL BRAZILIAN MINING ASSOCIATION.

Giango Soco, May 2.—I have just had from the mine the following intelligence of four tons of ore having been obtained from Tippett's level, two of which gave the produce this day of 18 lbs. 2 dwt., having about 10 lbs. to be worked up to-morrow. The vein is looking kindly for a continuation of produce from the same place.

May 15.—In my last letter I announced to you the commencement of the partial success which has attended our mining operations during the last week, as exemplified in the gold return. The first discovery took place late on the 7th inst. at Tippett's level, in effecting a rise from it to the surface,

Animas. Little can be said of this working in this report, the workmen having only entered a few days since. In the cross-cut of the Pilota and the end of San Ambrosio some slight appearances of ore are met with. The pit of San Francisco contains a small portion of the common classes of ore, and these are likewise found on the north-west side of the pit, an end has been commenced. The producer of the end of Jesus has fallen off so materially that the workmen have been removed to a pit (San Atanacio) in the floor of the same point, where more ore is found, but still of ordinary quality. The pit of Santa Elena has been communicated with the end of San Feliciano, and an end to the north-west has been opened, which will meet the pit of San Atanacio. The extraction from the pit of San Feliciano is variable, as will be that from the end to the north-west; the quality of the ore, even when most favourable, being very ordinary. The end to the south-east of San Feliciano has been communicated with the original pit of this name. Thirty-one pair of barrows are employed by day, and twenty-nine pair by night.

San Pio and Los Reyes.—A small quantity of fair ore is being extracted from the roof of San Pio, above the whole working of Santa Tomas, and some rich bunches have been found in a small roof between San Pio and La Cruz. The ore that remained in the lower part of the pit of Los Reyes having been extracted, the rubbish is now being cleared away, that an examination of the higher parts of these old workings may be made. The end of Santa Rita is yielding a small quantity of ordinary ore. Fifteen pair of barrows are employed by day, and fourteen pair by night. The weekly production of ore, in the rough state, from San Cayetano, San Pio, and Los Reyes, has averaged 1716 cargas, which, when picked, have yielded, 377 cargas, calculated to be worth \$1442, exclusive of reduction expenses.

San Miguel.—The band of ore in the Espiritu Santo has fallen off considerably during the last four months, but it is being followed up in a pit and roof. The working of San Miguel has been communicated with an old pit filled with rubbish, but the two ends to the south-east are still being followed. A small portion of ordinary ore is met with in the other workings to the south-east, and occasionally a rich thread is found. Ten pair of barrows are employed by day, and six pair by night. The weekly produce of picked ore has averaged 51 cargas, calculated to be worth \$255, exclusive of reduction expenses. There have been four sales of ore extracted on joint account with the bunches, amounting in all to \$13,359 4; of which, one-half, \$6679 6 belongs to the mine.

Ores sent to the hacienda of Barranco 2030 cargas
Ores on hand at the mine—picked 470
Ores on hand at the mine—unpicked 363—533 ..

G. R. GLENNIE.

BOLANOS MINING COMPANY.

Guadalupe. May 17.—Regarding the state of Barranco, I beg to refer you to the enclosed report of Mr. Rule for April; I have to inform you that I have seen myself the necessity of giving the barretors a partido, which system is in operation since the week ending the 1st inst.—the workmen receiving one-sixth of all the ore, and no money. I know perfectly well how much the company is averse to this system, and I would never have attempted at introducing it, had I not been under the necessity of finding out a way to render the working of the mine profitable, or to stop the losses, at least, at all events; this was the last trial that remained to be made. In general the amount of the remuneration of the workmen is not much different, whether they receive it agreeably to this system or to any other, and the chief objection to it consists only in the facility with which the detection of robbery is elicited; but in a country where that crime is seldom punished, the facility or difficulty with which it may be detected seems of but little importance. On the other hand, the partido system has many advantages; it encourages the workmen to exert their industry, and has often led to valuable discoveries, chiefly in mines where, as in Barranco, the ore occurs in bunches. Every time I visited the mine at the small weekly ore produce, as, according to appearances of the workings, it could have been considerably greater, and, doubtless, so it would have been, were the mine situated in a place enjoying a healthier climate; but, in Bolanos the heat is almost insufferable, and people are not inclined to work there as much as in other places; thus it has happened that barretors working on cargo in places not abundant in ore, where they could not gain good earnings but by great exertion, have contented themselves with the ayuda (which is customary when workmen on cargo do not gain a regular salary), without working at all, and sleeping a great deal of their time, and even when ore is abundant, they never work with as much assiduity as I suppose they will now. I hope that, in consequence of the partido system, a large quantity of ore will be produced; still, I beg to observe, that just now is the worst part of the year (the thermometer rising to 100 degrees in the shade), when people try to earn their living in any other way but by hard labour, and that but few workmen are going down the mine—but this is independent of the partido, and would, probably, have happened also, in some measure, under the old system; but then there must also be considered, that now only diligent workmen are going down the mine, and that the lazy ones keep away, to the obvious advantage of the negotiation, so that the number is somewhat reduced; this will not, however last, and probably workmen will soon repair to Bolanos from other places—for instance, from Zacatecas chiefly, as the mines there are now so very poor: as it is, we have gained the advantage of paying no money for the raising of ore. It appears also that, at present, rich ore, of which almost nothing had been received at the ore yard—every bit of the richest specimens being stolen—is coming forth, as the workmen have a hope of acquiring it in the legal way. A short time previous to my leaving Bolanos several specimens were produced, which would have tempted every body (who had not met with so many disappointments as the company) to set at stake in Barranco every thing, to the very last farthing. Notwithstanding my hope of being able to work Barranco without loss, I have offered the mine to the owners, on condition that they pay the value of the inventory. If I succeed in this, I shall be able to cover all our liabilities here, and to make remittances to the court to cover the liabilities in England and the bills drawn of late. As yet I have received no answer, and I fear that the owners will not agree to pay the whole value; at all events, I shall try to get as much as I can; the worst would be if neither they nor any body else could be induced to undertake to work the mine on their own account, for, if the latter was to be abandoned, the inventory would be of little value, and if the mine continues to be worked for the company's account in the present style, the probable profit to be derived from it would not be large enough to cover the liabilities at an early period—say, a pretty long time would be requisite, unless a very valuable discovery be made, in consequence of the partido, the only way to which it left, as the means are wanting to examine the mine further in a regular way. The mines of this district are not too promising just now. In San Clemente the transverse vein, at the level of Dios nos Guie, has not proved so valuable a discovery as we received at first. In San Nicolas the west end of Buen Suceso is in "bocas," but the veins and rises produce ore of good quality. The working of Poco Rico has been resumed, lest the mine should be denounced, but it will cause no loss, I hope, as some fine ore has been discovered, which will pay the cost. Ten months are now forthcoming, which mean 12 mes., and will produce, probably, 10 mes. The extraction is from forty to forty-five cargas per week; if the mine should not only continue paying costs, but enable us even to spend some money to examine the new discovery in a regular way, we may have the good luck, perhaps, to find still a bonanza. I beg to transmit likewise a translation of Mr. Roman's report on the Zacatecas Mines for April, and the San Clemente accounts for the same month. The result shown by the latter is not encouraging; still I must observe, that the produce of some tortas belonging to that month has not been entered into the accounts—however, they were washed after its close. Further reductions cannot be made, unless the mine be stopped altogether; it is not I, however, who am inclined to take this measure so long as it appears to me possible to work the mines without loss, but to prevent fluctuations in the produce is not my power. In the preceding month there was a considerable profit, and I hope there will be no less at least in the present. It is not the result of one month, and much less that of a single week, which is to be attributed to, but that of a longer period. On the whole, it is difficult to prevent losses in mining enterprises when fortune is adverse.

May 11.—I am glad to inform you that the communication between San Lorenzo cross-cut and San Miguel veins was completed last week, and that the level is now driving south of the vein on the footwall of the vein; the end is at present poor, but the vein is wide, and contains spots of ore; the ground is easy for driving, and we shall therefore soon be able to explore the vein under the wings of San Antonio and Santa Barbara, where there is still some ore in the bottom, particularly in the latter, where it is about three-quarters of a vara wide, of tolerably good ley; the water is sinking gradually in both, but neither of them are yet entirely dry. The cross-cut driving east, at Taylor's level, fifty-three varas south of San Nicolas, is passing through a vein containing small bunches of ore, and has about one or two varas more to reach the footwall, but the ground is exceedingly hard, and the progress therefore slow. In San Domingo vein, sinking below San Martin level, the vein is also hard, and the ore is boulders and bunches; it produced last month from 1-1/2 varas of ground, about thirty-three cargas of ore, the best part being the south end of the vein. In San Martin level, driving south of San Domingo vein, and north of Santa Barbara, the communication has also been made, and the ore, water, &c., instead of being taken up to the San Francisco level, as heretofore, will now be conveyed north through the level to San Nicolas vein. The distance between the two veins is about thirty varas, the greater part of which is ore ground, and new boulders ore are now conveniently opened both in the back and bottom of the level. The Arizmendi level, driving south of Goteras vein, continues to be a productive vein, about two varas wide, and produced during the month the rate of fifty-one cargas of ore for a vara of ground driven, and as this ore contains about two varas per carga, it follows that the value of each vara amounts to upwards of 100 mes., or \$100 worth of silver; and in San

Goteras vein, sinking below San Tomas level, about seventeen varas south of Goteras, the vein is also beginning to improve, and produce ore of a similar kind to those in the Arizmendi, so that we may expect a large piece of productive lode in the vicinity of these workings. The progress both in the level and the vein is slow, owing to the hardness of the ground, but as the workings have become extended, and the ore ground laid open, it is evident an increased produce will be the consequence. There is at present some water in the bottom of Goteras vein, which requires daily to drain, but this will be remedied as soon as the communication is made between it and San Martin level; the latter is at present driving with the greatest possible dispatch, to accomplish this desirable object, but as it is driving on the jambones, or upper part of the vein, there will be a cross-cut of about ten varas to reach the part on which the Goteras workings are situated, it will probably be three or four months before this communication can be made.

The quantity of ore raised in April amounted to 2703 cargas, 1874 of which were azogue, and contain per assay one Fox. 30dwts. per carga. For the present month, which will comprise five weeks, it is more difficult to estimate the quantity which may probably be raised, as the system of "partido" has been in operation two weeks only; we expect, however, that it will not fall short of 3300 cargas.

The directors have received advices by this packet that, in conformity with the instructions they sent to Mr. Stein in December, to suspend, without reservation, the working of every mine that was not actually paying its costs, followed by instructions still more peremptory and unqualified in February, the mine of San Cayetano has, for the present, been suspended. The accounts, however, received from Mexico, between December and May last, induced the directors to revoke their December instructions in respect to San Cayetano alone; and, in the latter month, they desired that this trial should be prosecuted, and it is, no doubt, now in progress. The shallow depth of this mine will allow of its being drained, and the works resumed at a very inconsiderable additional cost, and the temporary suspension will have the effect of giving relief to Bolanos, without having any prejudicial effect ultimately in respect to San Cayetano itself.

Remarks on the accounts of Bolanos District for April, 1841, by the Commissioner.

Loss on the mines, shown by the account of costs, amounts to \$10,793 2 5
Ditto on Maquila, in the smelting-house 110 1 1

Deduct profit on Maquila at the haciendas of Chica 8,103 3 6

Deduct profit on Maquila at the haciendas of Chica 3,312 1 0

Loss on the Bolanos negotiation, including Santa Fe and San Cayetano 7,381 2 6

Loss on Barranco alone, least included 6,642 2 5

Deduct profit on Maquila 3,201 7 7

\$ 7,440 2 6

Deduct commission of Messrs. Linn and Co. at Guadalupe, and cost of the conducta dispatched at the beginning of the month, comprised in general expenses not applicable to the month of April, but to a former period, \$1797 2 4. Ditto charged to mine for salary of chief commissioner, not now payable, \$496. Total, \$2293 2 4. Actual loss in April, \$1147 9 2.

There remains, then, a loss of about \$1100 on the mine of Barranco in April, but it must be considered, first, that the materials purchased, the amount of which is charged to the mine with \$1550, consist chiefly in fuel and charcoal, of the former of which a large stock is on hand, which is received agreeably to existing contracts, and the delivery of which will soon entirely cease; second, that, owing to the Easter festival, the smelting was suspended for a whole week, the result of which has been not only a loss on Maquila, but also a smaller silver produce than we could otherwise have relied on.

April 4.—San Clemente.—The sinking of the Tiro General was continued, and five and a quarter varas have been sunk in favourable ground. Towards the end of the month a vein was cut, upwards of one vara wide, divided into several branches; its underlie is south, and its direction the same as that of the vein of San Jose. It seems to be the continuation of this latter one—the ore being of inferior ley and very like those found in other parts of that vein—viz., galena and bismuth in white quartz, alternating with bronze calders. The footwall of this vein has not yet been cut with the shaft; when the working on the vein of San Jose reached the Tiro General last year, in the level of San Francisco, the vein disappeared, as had been the case twenty varas further up, in the level of Dios nos Guie, and although several cross-cuts were driven with a view to find it again, we did not meet with it; it is probable, therefore, that the vein we have cut now is part of the vein of San Jose, which we have missed in the level of San Francisco, with the cross-cut north of Dios nos Guie, driving east, but a few insignificant strings of blue silver ore (penta azul) have been cut. This work, as well as all tutwork bargains in general, was on the 26th of this month for want of funds. The point of greatest interest in the mine is, for the present, the low level of Dios nos Guie, driving east, where a vein was met, the direction of which is from north to south; its underlie is eighty degrees east; it was worked on cargo, and the end which had been commenced by that means was driven on six varas; the ore was at first from three to four decimales wide, but the width increased to two-thirds of a vara. It was divided into several small compact strings of compact bronze, with blue silver, sulphur of silver, and native silver; with the latter, in some part, even the walls were impregnated. Soon after a rough of quartz was met with, and the vein became narrower at the same time that the quality of the ore fell off—nevertheless, this is still the best class that the mine produces. It is to be hoped that the working on this vein, unknown before, will prove a productive one by-and-by. Towards the south the vein appears to be unproductive—at least there is no trace of ore south of the level. The working on cargo has been a little productive, chiefly on the vein of San Jose. The extraction amounted to 3000 cargas.

San Nicolas.—The most interesting point, for the present, is the level of San Francisco, driving west, because there we have discovered lately the best ore, and because of its connection with the vein of Buen Suceso. It appears that the end of San Francisco is distant from that of the level of Buen Suceso, driving west, sixty varas; the latter being 333 varas above the former, which is 128 varas below the surface. The course of this vein, of which it seems to have been connected with that of San Clemente, has been in the same direction as that of Buen Suceso; the sameness of the ore, the underlie, and the distinctness of the walls, leave almost no doubt as to both being one and the same vein. The veins near the end of San Francisco have been sinking on ore of good quality; this working is the most important one of the mine, considering its productiveness of ore of a superior ley—971 cargas of which have been raised; on this account it is much to be regretted that, for the before-referred to reason, the tutwork bargain of the end and its immediate vicinity cannot be continued. The extraction amounted to 3000 cargas.

San Clemente mine—costs. 8,26,045 3 0
returns 18,044 6 4

Loss 8,301 2 4

San Nicolas mine—costs 10,015 7 0

returns 8,379 1 0

Loss 8,645 6 0

REAL DEL MONTE MINING COMPANY.

General Expenditure and Returns Account for the year 1840.

Expenditure.	Returns.	Profit.	Loss.
January 1, 1840	\$20,000 00	28	\$20,000 00
February 27	64,662 26	—	64,662 26
March 31	62,116 74	—	62,116 74
April	60,000 49	60,000 49	—
May	60,975 75	60,000 00	7,975 75
June	64,610 50	60,007 45	4,602 50
July	58,807 75	58,000 00	807 75
August	60,449 50	60,007 75	442 50
September	61,210 75	60,000 00	1,210 75
October	59,297 75	58,400 00	897 75
November	45,816 4	40,000 00	5,816 4
December	40,811 14	31,801 48	8,009 14
Expenditure.	Returns.	Profit.	Loss.
\$20,000 00	\$80,000 75	\$60,000 75	\$70,007 50

Loss \$70,007 50

For the first four months of 1841.

Expenditure.	Returns.	Profit.	Loss.
January	\$20,000 00	28	\$20,000 00
February	64,662 26	—	64,662 26
March	62,116 74	—	62,116 74
April	60,000 49	60,007 45	4,602 50

* Includes upwards of \$10,000 for the cost of new engine marked in pencil in the most recent of the books.

Mineral del Monte. June 3.—In San Gregorio the vein is sinking below the eighty-five vara level, east of San Ramon shaft; the lode is two varas wide, with some azogue ore. For the last three weeks the clearing the Sereno, east of San Ramon, has been suspended, in order to cut open the old workings below that level for a footway, and a vein or pass to throw off down to the eighty vara level. We have now nearly finished it; and, in the beginning of next week, shall resume mining the Sereno level east. At the Santiago level, west of Dolores diagonal shaft, we are now driving west of the cross-cut south, thirty-six varas west of shaft; the part we are going on is about one and a half vara wide, with azogue ore; the barretors are employed in stopping east and west of San Luis vein, below the San Juan level and back of Santiago level, where there is a large lode, with azogue and some smelting ore. In the Juilien, or 110 vara level south, on the Santa Fe ridge vein, the part we are going on is about one and a half vara wide—favourable ground, but poor. Having communicated the side shaft west of the Santiago level, west of Dolores diagonal shaft, we are now driving west of the cross-cut south, thirty-six varas west of San Cayetano shaft, to the side shaft east of Dolores cross-cut, thirty varas west of Santa Sereno shaft, we commenced in the past week to drive the side shaft west of cross-cut south seventy-three varas east of San Cayetano shaft, where the ground is favourable. The water is going through the new piece of shaft that is communicated. We have four destornios stopping the back of the Esperanza, or 118 vara level, east of Santa Teresita shaft, to make room for boulders to carry back the water to San Cayetano. In this place there is some azogue ore. At Teresita we are going regularly in sinking the shaft below El Sonoro, or 220 vara level. Twelve Mexican compasses and eight pens are employed here; the ground at present is more favourable, and we are now down 342 varas below that level. This morning we communicated El Sonoro, or 220 vara level east of Teresita, to the level west of Sereno vein, twenty-four and a half varas below San Felipe level; we shall now stop the back west, and the bottom east from communication, where there is azogue, with some smelting ore. In Sonoro level, west of Teresita shaft, there is a little azogue ore. In San Crisostomo vein, sinking below the San Felipe level, at 112 varas east of Teresita, the lode is about two varas wide, with azogue and smelting ore. In the level driving west of Las Nieves vein, 206 varas below San Felipe level, there is azogue, with a small quantity of smelting ore—two varas in width. In the steps east of San Crisostomo vein, about nine varas below San Felipe level, there is azogue ore. There is a large lode in the level west of San Crisostomo vein, eight varas below San Felipe level, with azogue ore and some smelting ore, in favourable ground.

In the level, east of San Miguel vein, eight varas below La Cruz level, west of Teresita shaft, there is favourable ground, with azogue and a little smelting ore, vein from one and a half to two varas wide. We have not yet got the end of the Esperanza, or 118 vara level, west of Guadalupe shaft, as we have had another run, owing to the boards, &c., breaking in the back. We are now opening some ground to the north, in order to leave the crushed ground to the south; the water still remains much the same as in the past month. We are now clearing west of San Bernardo vein, 227 varas west of Guadalupe shaft, at thirty-two varas below the shaft level; we still find the old workings full of alluvium, timber, &c., and are in hopes of finding some veins going below this level, as these are old inlets in the bottom, in which the water formerly came from westward. In San Francisco shaft, clearing and securing below the shaft, we have gone on favourably, and having now reached the firm ground in the north side of shaft, and taken up the timber, &c., to the east, we shall, in the ensuing week, suspend driving to secure the shaft, footway, &c., from the shaft to where we commenced to clear the shaft, or in several places we find the timber stuck in such that the boards have fallen in the shaft. In the past week we communicated San Vicente shaft, on the Santa Teresita vein, in the shaft level, and

Avindero adit, driving south from the Bello vein, and the same level, south from La Virgen shaft, the ground hard, but the level north of La Virgen shaft is more favourable, having met with a small branch going nearly in the direction of the adit. In San Pedro shaft (Acosta) we have nearly reached the adit with footway divisions, &c., and shall, in a short time, commence to cut ground for haulers, cisterns, &c., about forty-six varas below the adit. In the side adit, driving east of cross-cut, going from Acosta to San Pedro shaft, there is favourable ground, and may hope in four or five weeks to communicate with the old adit. In the Guadalupe, or forty varas level, driving east of Acosta shaft, the ground is hard, with some azogue ore. In the slopes above the back of the forty-seven varas level, south of La Luz mine, on the Santa Brígida vein, the ground is favourable, with good azogue ore.

MINE ACCIDENTS.

Wheel Ann Mine.—John Shugger (a young man about twenty-five years of age) and his comrade were employed at Wheel Ann Mine, in preparing a hole a blast a rock, when the charge suddenly went off and injured them severely.—Shugger died about ten minutes after the accident.

Levant Mine.—On Tuesday, the 20th ult., at Luke Gross was at work in Levant Mine, a large scale of ground fell and nearly buried him, but, through the active exertions of a number of men in removing the stones and rubbish, he was got out with a few slight bruises.

Thornley Colliery.—A dreadful occurrence lately took place at the "bank" of Thornley Colliery. A man named George Bone, who was employed in the pit as a horse-keeper, having given the usual signal for drawing up a man, the engine commenced working for that purpose, but, shortly afterwards, on account of some interruption, of which we have not heard an explanation, it suddenly ceased its operation, when, it is supposed, the poor fellow having lifted his head above the tub to ascertain the cause, and the machinery just then recommencing, he must have come in contact with some intervening obstacle, which instantly severed his head from his body.

To be published, by subscription.

A VIEW OF THE HACIENDA DE REGA, BELONGING TO THE REAL DEL MONTE MINING COMPANY, drawn on stone, by William Bevan, from a sketch taken on the spot by JOHN PHILLIPS, secretary to the company. Dedicated, by permission, to Sir Thomas Powell Buxton, Bart.

Subscription, 10s. for two copies—one with references. Price to non-subscribers 7s. 6d. each copy.—Address to Mr. John Phillips, 2, Duke street, Adelphi, London.

PUBLIC COMPANIES.

MEETINGS.		
Monmouth and Glamorgan Bank	King's Head Inn, Newport	Aug. 9
London and Brighton Railway	London Tavern	9
Stibberian Mining Company	Austiniators	9
Hayle Railway Company	Hayle house, London-wall	9
Baldford and Rugby Railway Company	Baldford	10
Eastern Counties Railway	Bond street, Manchester	10
British Rock and Patent Salt Co.	Station, Shoreditch	12
London and Birmingham Railway	Great Winchester street	12
Port Gloucester Mills Company	Euston Hotel	12
Shipwrights' Towing Company	London street chambers	12
Redruth Consolidated Mining Co.	102, Leadenhall street	12
Combermarin and N. Devon Mines	George and Vulture Tavern	12
Manchester and Baldford Water-works	At the Mine	12
London and Blackwall Railway	Offices, Piccadilly, Manchester	12
Great Western Railway	London Tavern	12
North Midland Railway	Merchant Venturers' Hall, Bristol	12
R. Metropolitan Gas Light & Coke Co.	Station, Derby	12
Great North of England Railway	Office, Three Tuns, Tavern	12
	Sept. 4	12
	7	12
FALLS.		
West Wheal Jowett Mining Ass'n	London and Westminster Bk.	12
London & South Western R'way	As former calls.	12
Tregolian Mining Company	London and Westminster Bk.	12
Redruth Consolidated Mining Co.	Brown and Co., Leeds	12
De Dunstable Mining Co.	28, Birchin lane	12
Cornish Mining Company	Union Bank	12
Tregolian Mining Company	Sept. 24	12
British Colonial Bank	London and Westminster Bk.	12
	Oct. 12	12, 22, 28, Swithin's-lane
DIVIDENDS.		
London & County Banking Co., 5 per cent.	Offices	Aug. 12.
Wicklow Copper Mine Company	15 per cent.	Offices, London and Dublin
Manchester & L'pool District Bk., 7s. per share.	18.	18.
Mining Company of Ireland	15 per cent.	Offices, Dublin
	Sept. 1.	1.
* For the last half-year.		

NOTICES TO CORRESPONDENTS.

G. J. H., "Bristol."—The Great Wheal Prosper Mining Company was last carried on under the management of Messrs. W. Pipe, J. Nuttall, and S. Taylor, of Manchester; but, we believe, all operations are now suspended, and the machinery sold. Any further information required by our correspondent can be procured of either of the above gentlemen, or at the office, 5, Market street, Manchester.

B. R., "Birmingham."—*The Conduction of Coal and the Preparation of Smoky Charcoal*—*Practically Considered*, the London publisher, J. Weale, Holborn; the Birmingham agents, Wrightson and Webb. Second edition, with plates.

E. J., "Buxton."—An Index to the contents of the Journal is published regularly at the end of each year, for the convenience of referring to articles contained in the volume; any of the earlier Numbers (with the exception of one or two) can be had, on application, at our office, or through a bookseller.

We have received Lieut. Ouchterlony's "Mineralogical Report upon a portion of the Districts of Notts, Derby, and Gantour," which shall be noticed in our next. Several correspondents, the insertion of whose communications is postponed, shall receive attention in our next.

Leeds Review.—The report of Messrs. R. B. Watson and Co. reached us too late for insertion.

Haw.—"M. E." and "the Vale" are apprised that the specimens from Ireland arrived this morning, previous to going to press.

John Herapath, the Druggist.—It is many years since this person was pandered round London, by a respectable contemporary, under the above distinctive appellation—a course rendered requisite, that the public might be on their guard against the infamous attempts of this ignorant quack to obtain popularity, at the expense of the labours of honourable and talented gentlemen; and the manner in which he still persists in the endeavour to thrust himself and his notorious staff into public notice, not only confirms the correctness of the opinions then formed of his despicable unscrupulousness, but is calculated to draw down that punishment which his miserable conduct so justly merits. Ejected, with contempt, from every post or society into which he has endeavoured to force himself—accused, as a self-seeking meddler, by all who have had the misfortune to become acquainted with his execrable disposition—despised, as a heartless traducer, for (besides several other disgraceful acts) his pitiful attempts to detract from the talents and fame of one of the brightest ornaments of science, —he remains, the pitiful relic of a detected and availed libertier, reduced to the meanest and most despicable means, to which pen and ink can be applied, to eke out a wretched existence. We do hope, that the repeated rebuffs met by this ill-advised individual, will, in time, have the effect of convincing him, that, before he can obtain "a scientific and literary distinction," which he has the modesty to claim, he must forgo his present method of endeavouring to turn every occurrence with which he becomes acquainted (whether public or private) into a means of profit, and purpose. If his malignant disposition will allow him to do so, a more honourable and upright course, we trust we shall not again have occasion to revert to this disgraceful subject.

THE MINING JOURNAL,
Railway and Commercial Gazette.

LONDON, AUGUST 7, 1841.

We have from time to time taken the opportunity of referring to the results produced by the application of British capital to the working of foreign mines—more frequently, we regret to say, to tell a tale of disappointment than to speak of the realisation of those visionary expectations with which the shareholder too often enters into the field of enterprise, and in which the experience of the last fifteen years has shown to have been too much the habit of the nation to indulge.

It is not, on the present occasion, our intention to enter into comparisons affecting any of the extensive undertakings worked by British capitalists in the New World during the period alluded to, but we have felt pleased recently at having had it in our power to congratulate the shareholders of some of the largest companies at the profitable result of their workings for copper—far different, with two or three exceptions, to those instituted for the precious metals. It is a saying, which we believe to have passed into a proverb, in one or other of the countries we allude to, that the party working a gold mine ruins himself, a silver mine just enables him to live, and with one of copper he makes his fortune. Certainly, recent experience proves the truth, as far as regards copper mines, or, at least, establishes their superiority where British capital has been brought to bear.

The produce of these mines has of late much increased, and we have, on several occasions, referred to this fact, in order to notice the effect so great an increase is likely to have on the value of our English and Irish ores; foreign copper ore being imported amounted in hand in Great Britain, and, after having had all the ad-

vantages of our superior smelting capabilities, finds its way to foreign markets, without the payment of an export duty, whereby the foreign consumer is supplied at a price several pounds per ton lower than that paid by the home consumer. This is a state of affairs sufficiently painful to the English manufacturer, and we cannot disguise from ourselves the feeling, that with the vastly increasing quantities regularly sent to this country for smelting, the foreign consumer will eventually have yet greater facilities for competition. We are gratified at the success which has attended the operations of the copper mining companies more particularly alluded to, but cannot avoid coupling with that feeling a fear of the injurious effects so large an importation cannot fail to have on the expensive workings of the deep mines of Cornwall and elsewhere, where the most perfect machinery and the most consummate skill is insufficient to secure numerous mines from absolute loss, much less to enable them to work to advantage.

It was not our intention to have remarked on the charge preferred against Mr. Alderman HUMPHREY by the chairman of the board of directors of the Blackwall Railway Company, or the defence put forward by that gentleman, with the countercharges conveyed in the letter which appeared in our columns of last week, but the numerous communications we have received on the subject (the insertion of which we have declined), renders it incumbent on us to offer some few words by way of observation, more especially as it has been hinted by more than one correspondent, that, in the absence of any comment, we might be suspected of wishing to "shield the delinquents." Such is not our desire, and we feel that, in fairness to all parties, our observations should not have the slightest tendency to prejudge the question; at the same time, we are ready to admit the correctness of the views of our correspondent, that those observations we may consider it necessary to make, might be at a period which, if subsequent to the meeting, would lose the desired effect in directing the especial attention of the proprietors to the system which, we believe, to be too general, but which will, we trust, be now exposed to the glare of public light.

The letter of Mr. Alderman HUMPHREY might, so far as we can see, have remained unwritten, if that its object was to restore the writer to the position which he held antecedent to the *expose*, as the facts are admitted, and the attempt at palliation says but little for the probity or principles which we should expect to find in a member of the Legislature and a magistrate of the city of London. Alderman HUMPHREY, after much twaddle, from which he would lead his readers to assume that he was one of the most desirable of a board of directors, from the invitations, resignations, and repurchases of shares (which, of course, were all for the good of the proprietors), very candidly avows, that, with the view of making up or meeting losses arising out of the investment in the purchase of forty shares, he took to "jobbagg." He was ready to sacrifice the interests of his co-proprietors—those who had reposed confidence in him—for the sake of gain; he was ready to resign his seat in the direction of the affairs of the company, where his services were deemed so valuable, that he might, by "bearing" the shares, realise a profit on his operations, which would cover the loss he had sustained by his investment. And this is conduct which the representative of the borough of Southwark—an alderman of the city of London—feels no shame in acknowledging through the public press. We thought Alderman Talacre Wood bad enough, but he never has pretended to justify his acts; and let us see what is the justification put forth by Mr. Alderman Blackwall HUMPHREY—it is, forsooth, that his operation in the share market, in selling shares which he did not possess—such operation, be it remembered, being that of a director of the company, and therefore calculated to influence the price of shares—was nothing when compared with the act of the board of directors, of which he constituted a part, in issuing shares to the proprietors at a depressed price, and thus, as Alderman HUMPHREY would infer, depreciating the value of the property. Why, this very movement on the part of the board—had they been playing Mr. Alderman HUMPHREY's game—was one which was perfectly consonant with want of principle and honesty. The price of shares thus lowered in the market, could not be better managed, and Mr. Alderman HUMPHREY, or the directors, might then "buy in" the shares of which they were "bears," or, in other words, purchase at a low price those shares which, without possessing, they had previously sold at a much higher rate. But this was not the course pursued by the directors, which ranks amongst their number men of the highest respectability and character—the measure they proposed was submitted to the proprietors, and assented to by them. If it was a beneficial measure, the proprietors equally benefitted in proportion to their interest in the undertaking. On the other hand, if it had an injurious tendency, the injury was alike felt by all. This was not the conduct of Mr. Alderman HUMPHREY—No; his object was private gain. He did not come forward to the body of proprietors and protest against the new issue of shares; he did not honestly and boldly state to them that his co-directors were defaulters—that their acts, if not illegal, were, at least, immoral—that he was disgusted with the concern—and that he should retire from the direction. Most certainly not. He took a very different course—he sold his shares, and, in addition to which, further shares, to the extent of 150 per cent. on the number held by him, with the object of buying them in at a reduced price;—this is admitted. It is true that Mr. Alderman HUMPHREY gives as a reason, that he was under obligations, as a director, for debts due by the company, and he would thus lead us to infer that such was one cause of his secession. We would ask him, has he, by seceding from the direction, released himself from the responsibilities he has incurred?—Most certainly not.

We entertain no doubt but, on a further investigation taking place, several facts will come out not calculated to reflect credit on the parties, for we cannot imagine for a moment that the chairman of a board of directors would expose at a public meeting the conduct of one of the body with whom he had acted, or that a resolution of the nature passed on such occasion would have ever been contemplated without strong evidence being previously adduced of the culpability of the party whose conduct came under the consideration of the proprietors assembled.

We will not now further press the subject as affects the worthy Alderman, whose defence we have shown can only be construed into an admission of guilt, with palliative circumstances, but which only go to prove that he was unworthy of the confidence reposed in him by the proprietor, having neglected the trust which, as director, he was bound to have observed in the protection of the interests of the shareholders, while he has the hardihood, now he is attacked, to avow that the directors, at the time they owed thousands of pounds, actually declared the shares of those who had placed them in office forfeited, and, doubtless, in many cases, the non-payment of the calls, on which the shares were subjected to forfeiture, arising from inability, and not disinclination, to meet the demands made on them by those very directors, with the view, as Mr. Alderman HUMPHREY would imply, of protecting their own persons. Had this gentleman been honest, he would have exposed such conduct. Had he been confident in the rectitude of his own conduct, he would have met the proprietors, and afforded not only an explanation, as affected himself, but assigned his reasons for concealing from the shareholders the culpability of his co-directors. The virtuous indignation displayed by the worthy Alderman, however, in his epistles, may be supposed by him to effect all

this. The result of the next meeting will best show how correct he is in his estimate.

We must, however, proceed to the consideration of the charge made against certain of the directors by Mr. Alderman HUMPHREY, which must be repudiated, or we must require that further vacancies in the board of direction should be created, by the secession of the defaulters of whom complaint is made. We are obliged, as must the shareholders be, to Mr. Alderman HUMPHREY for thus publicly directing attention to an abuse which we believe to be too common—that of the directors accommodating each other at the cost of the shareholders—and which the sooner it is put down the better. We can only assure Mr. Alderman HUMPHREY he shall have our best aid—let him only furnish us with data, we will undertake to work them out.

The charge to which we have alluded will, we expect, be met at the forthcoming meeting, as the directors have, through their secretary, expressed their intention to afford explanation to the proprietors on the several topics treated on in Mr. Alderman HUMPHREY's missive, and we trust that gentleman will make a point of being in attendance, to substantiate the charges which he has brought forward. He owes it to himself, to the board of directors, and to the body of shareholders at large, to enter into, not only an explanation of his own conduct (which we should hope would be of a far more satisfactory nature than that which he has set forth in print), but also of the conduct of the proprietors, that the directors, who have been defaulters, were actually set at the time of the confiscation of shares. If this be made out satisfactorily, we think proceeding in law, or in equity, will lie against the directors, for having illegally, as it appears to us, forfeited the shares of individuals, when they were not themselves, by the Act of Parliament constituting the company, competent to vote at a public meeting, and, therefore, far less authorised to declare the forfeiture of shares in their capacity as directors. Such conduct, if Mr. Alderman HUMPHREY's statement be borne out, is, to say the least, disgraceful, and cannot be too severely reprehended.

It is but a short time since we adverted, with feelings of gratification, to the half-yearly report of the Mining Company of Ireland, which probably offers as fair an example as can be selected of what may be effected by perseverance and good management, in the working of numerous undertakings, varying much in the character and extent of their produce and in the cost of their operations—at the same time affording, from the average result, the means of an increased dividend of from 10 to 15 per cent.—the works being maintained in fair working order, and with increased facilities for future development.

We have now again the pleasure (and glad are we indeed to call it periodical) to allude to the advertisement by which the usual dividend of 15 per cent. of the Wicklow Copper Mine Company is announced; the mine which has contributed to this pleasing result is that of Ballymurtagh, one of those in the county of Wicklow, to which we made reference in a late Number as highly productive of pyrites or sulphur ore—an article called into beneficial operation in this country by the capricious and impolitic conduct of the KING of SICILY. Our remarks on that occasion apply now with equal, if not with increased, force, as it must be to the continuance of the profitable condition of workings for this article of produce that the country must look for a duration of so extensive a source of employment. In the mean time, it may be mentioned, that large sums are being outlaid at the mine in question in large and new machinery, new shafts, and other appliances for extended workings, in which we heartily wish them success.

STEAM-ENGINE NUISANCES.—At a meeting of the Birmingham Street Commissioners, on Monday last, it was announced that a gentleman named Chester, had invented an apparatus for effectively suppressing smoke arising from steam-engines; Mr. W. Phipson said he had witnessed its operation, and highly approved of the invention. The committee are about examining its merits, and if found to answer the expectations held out, to recommend its general adoption. We should be glad if some correspondent would furnish us with the particulars of this new plan, which, we are informed, is very ingenious, and likely to effect, in a great measure, the desirable object for which it is intended; the main question, however, is the economy in fuel, as by the patent secured by Mr. C. W. Williams, of Liverpool, the smoke is consumed, and hence no nuisance arises, while a considerable saving results from the improvements introduced by that gentleman.

Wire Rope.—Mr. Lang (of the London Polytechnic Institution) read a paper at the meeting of the British Association, on Tuesday last, on the wire rope; he showed that this description of rope was capable of performing every function of hempen cable, and that it was 30 per cent. cheaper, taking weight, size, and strength into account, whilst its durability is at least three times more. He especially referred to the standing rigging of several of Her Majesty's ships, and to the Blackwall Railway, where it had been used for the last twelve months, and, having been lately examined, and severely tested (the particulars of which we detailed a few weeks since), had been declared as good as when it was first applied.—The President stated the advantages of its introduction into the mines of Cornwall, where he had no doubt it would soon become general.

EXPLOSION OF STEAM-BOILERS.—M. Séguier read a paper at the French Academy of Sciences, on the 26th ult., on the means of diminishing the danger of explosion in steam-boilers, in which he recommended a series of numerous small tubes, not more than six inches diameter, instead of large boilers, since by this method the explosive force might be reduced to 1-17th part of its intensity.

FORMATION OF NEW BEDS OF COAL.—Coal is of course clearly ascertained to be of vegetable origin, and to have been produced by the drifting into lakes, estuaries, or bays of the primeval earth, of masses of vegetable matter, which, having been covered over by fresh depositions of sand, mud, &c., have, by the combined action of moisture and heat, been bituminised into coal. It may, at first sight, strike us as singular, that a substance so extensively distributed as coal should be produced by agencies of apparently so casual a nature; and, in fact, in our colder climates, Nature presents no agencies capable of elaborating results of so magnificent a character; but, in the vast rivers of the new world, the transport of vegetable matter by rivers, and its entombment at their mouths, prevails to so great an extent, that the Mississippi annually bears down in its course whole forests of trees and shrubs, which form rafts of several leagues in extent. These masses thus entombed in the stream, and covered with the accumulations of sand and mud continually deposited by its waters, would, in the course of time, present a series of strata, consisting of coal, sandstone, limestone, &c., which would present a perfect counter-part of our existing coal-fields, with their varied alternations of these beds.

EXTRAORDINARY MAKE OF IRON.—At the Park End iron furnace, near Caleford, in the Forest of Dean (the property of Messrs. Montague and James), 144 tons of iron (Nos. 1 and 2) were made in the course of last week—being a larger quantity than is known to have ever been made in the same time and of so good a quality from one furnace.

LONDON AND BLACKWALL RAILWAY.—The extension of this railway from the Minories to Fenchurch-street having been completed for the reception of passengers, and undergone a proper survey by order of Government, was opened on Monday last to the public; the terminus is not yet finished, as there are several workmen still employed about the building. Although the line has been extended some distance, the directors have not increased the price.

EASTERN COUNTRIES RAILWAY.—The works at the eastern part of Chelmsford are rapidly progressing. The embankment to form the line from Springfield over the river Chelmer has been raised to within a few rods of the bridge now erected, by which the line will pass over New-street; the arch of the bridge is completed, and exhibits a skilful piece of workmanship; it is supported by ten buttresses on each side. The embankment also at the western side of the town is fast approaching the river Cam. These two contracts, which are expected to be completed early in the spring, will form about two miles of the road in our immediate vicinity.—*Evening Herald*.

GRAND DISCOVERY IN CHEMISTRY.

A discovery has been lately made, which is likely to extend widely the boundaries of chemical science. The views of the alchemists, with regard to the transmutation of metals, are now shown to be of possible realisation. Chemists have ceased to draw any line of distinction between those bodies ordinarily termed metals, and other elementary substances—i. e. in proceeding through the list of elements, from oxygen to platinum, we cannot say where the metallic property commences. Now Dr. S. Brown, of Edinburgh, has given proof, in a paper read before the Royal Society of that place, that the elementary body, carbon, can be converted into silicon, which last substance was, not long ago, considered metallic. Observe, this is not the decomposition of silicon, or rather the formation of it, from a new base, but the proof of the absolute convertibility of one elementary body into another, which we must still regard as simple. This grand discovery, second to none that has ever been made in science, and likely to prove of vast benefit in its results to the resources of the arts, is the work of a young man—who had, however, given proof of the greatest powers—*ex pte Herculem*. Like other great discoveries, it has been preceded by such indicative facts as might gradually induce us to regard it as possible. We allude to the doctrines and facts of isomerism, which showed that some compound bodies, presenting on analysis the same chemical composition, might yet differ greatly in properties. In these cases it was conceived that the atoms might be differently arranged, or that the composition of the one body might be represented by doubling the atoms of the other, and so forth. Thus, if we have a body whose composition may be represented by a , we may write it a , or twice a . Now, as our only reason for believing any body to be simple is, that we are unable to decompose it, it is quite possible that some of the bodies which we call simple, might really be compound and isomeric. But to sum up the facts presented by Dr. Brown:—His late communication is purely of a practical character, the author having refrained from presenting what he conceives to be the *rationale* of the singular facts he has discovered, until further investigations of a similar kind shall have been executed by himself or others. The manner in which the author establishes the isomerism of carbon and silicon is very simple, and consists in giving a great many processes by which the former may be converted into the latter. These are contained in a series of five sections. The first treats of the production of silicon from free paracyanozen; the second, of the formation of mixed silicates of copper, iron, and platinum, by the reaction of paracyanozen; the third, of the quantity of nitrogen separated from paracyanozen, when it is changed into nitrogen and silicon; the fourth describes processes for the preparation of transparent crystallised silicate of iron from the paracyanoide of iron and the ferrocyanide of potassium; and the fifth gives easy processes for the extraction of silicic acid from ferrocyanide of potassium by the action of carb. potass. The last of these processes has been repeated in the laboratory of the Newcastle Medical School, and found to give the result described by Dr. Brown.

BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

The first assembling of the general committee of the eleventh annual meeting of the British Association took place on Wednesday, the 28th ult., at the Royal Hotel, Plymouth.

Professor WHREWELL (president elect) in the chair.

The Rev. J. YATES read the report of the council to the general committee, which stated that 10000. had been purchased in the 3 per cent. Consols, in addition to 5000. in the same stock previously belonging to the association. Professors Ecke and Link (of Berlin), Jacobi (St. Petersburg), Otto (Breslau), and Dr. Lamont (astronomer-royal, Munich), have been added to the list of corresponding members. Mr. E. Woods, one of the committee appointed at Birmingham, to conduct a series of experiments on railway constants, has been requested to complete the report of that committee. At the request of Dr. Daubeny, the preparation of his report, on the connection between agriculture and chemistry, was deferred, it having been, in a great measure, superseded by the appearance of Professor Liebig's report on organic chemistry. The report also referred to several alterations that have been made in the arrangements of the association, and also to a suggestion that has been adopted for a cheaper and more extended issue of the Transactions of the Association.

The following were chosen officers of the sections:—

SECTION A.—PHYSICS AND MATHEMATICS.

President—Rev. Professor Lloyd.

Vice-Presidents—Rev. Dr. Robinson; Professor Christie.

Secretary—Professor Stevley.

SECTION B.—CHEMISTRY.

President—Professor Graham.

Vice-Presidents—Dr. L. B. Balfour; Professor Paynter.

Secretaries—Mr. Hunt; Mr. Pridgeon.

SECTION C.—GEOLOGY AND PHYSICAL GEOGRAPHY.

President—Mr. De la Beche.

Vice-Presidents—Marquis of Northampton; Professor Sedgwick; Rev. Dr. Buckland; Rev. Mr. Conybeare.

Secretaries—Mr. Hamilton; Mr. Hutton; Dr. Moore.

SECTION D.—NATURAL HISTORY.

President—Dr. Richardson.

Vice-Presidents—Mr. Gray; Professor Henslow; Mr. Owen.

Secretaries—Dr. Lankester; Mr. Couch; Mr. Paterson.

SECTION E.—ANATOMY AND MEDICINE.

President—Dr. Roger.

Vice-Presidents—Dr. Miller; Sir D. Dickson.

Secretaries—Dr. Butler; Dr. Page; Dr. Sargent.

SECTION F.—STATISTICS.

President—Lord Sandon.

Vice-Presidents—Professor Quetelet; Col. Sykes; Rev. Mr. Hore; Mr. Porter.

Secretaries—Mr. Luney; Mr. Rawson.

SECTION G.—MECHANICAL SCIENCE.

President—Mr. J. Taylor.

Vice-Presidents—Professor Moseley; Mr. Rendall; Mr. Emrys.

Secretaries—Mr. T. Webster; Mr. W. Chaffield.

Mr. JOHN TAYLOR (the treasurer) then read the report of the financial condition of the association, from which it appears that the cash in hand amounts to 3672. 3s. 11d.; stock, 53554.; books on hand, 1203. 6s.—making the total property of the association 69554. 9s. 11d.

Mr. PHILLIPS (the assistant secretary) presented a programme of the arrangements.—The committee then adjourned to Monday.

On Friday the several sections commenced their meetings, and, in our next, we shall proceed to notice the different papers read on that and the subsequent days, selecting (as on former occasions) those only, from relating to the various branches of science treated on in our columns, as are likely to be of interest to our readers.

On Saturday the attention of the members was directed to the recreative, none of the sections meeting, to allow an opportunity to join the several excursions. The largest party, consisting of the several geologists, went on an excursion to view the seven dikes of Cornwall, on the edge of that large and romantic wild, Dartmoor, the picturesque and next town of Tavistock, with the celebrated Wheal Friendship and Wheal Betsy Mines, at Mary Tavy. This party contained the most distinguished of the census, amongst whom were the Marquis of Northampton, Earl Morley, Lord Ebrington, M.P., Sir T. D. Arkland, and Sir C. Lemon. Almost every conveyance of the town was put in requisition, the distance being about eighteen miles from this place. The party, consisting of upwards of 200 persons, was conducted round the mines to witness the application of water power and steam, on a very extensive scale to the various purposes of pumping, raising the ores, and crushing and stamping, by Mr. J. Taylor, and Mr. De la Beche explained the nature of the strata. These mines are very extensive, the steam running upwards of three miles, producing the ores of copper, lead, and tin, and being excavated to a depth of 1200 feet. The party was afterwards provided with a cold collation by the proprietors of the mines.

On Monday the adjourned meeting of the general committee was held, when a series of invitations from Manchester were read; it was unanimously resolved that the meeting for the next year (as we stated some weeks since) should be held in that town, and, on the motion of the Marquis of Northampton, Lord Francis Egerton, M.P., was appointed president; the Dean of Manchester, Dr. Dalton, Dr. Henry, Professor Sedgwick, and Sir B. Heywood, vice-presidents; and Dr. Flound, Mr. F. Clark, Mr. W. Orme, and Mr. J. Heywood, secretaries. It was also resolved that the meeting be held in June, as most convenient for the local officers.—An invitation was read for the meeting for 1843 to be held at York, where the association was first established in 1830.

On Tuesday the different sectional meetings were well attended; there was a great number of papers read, and much business transacted, the proceedings being carried on to a late hour in the afternoon, in consequence of the near approach to the termination of the meeting.

On Wednesday the sectional business terminated, having been, we regret to say, less in value and importance, perhaps, than that of any previous year.—A numerous meeting was held at the Athenaeum, in which a committee was formed to take steps for the erection of a monument to the memory of the late Sir Humphrey Davy in the county of his birth; it was well attended, and a liberal subscription entered into.—In the evening a *soirée* was given at the Town Hall, Devonport, but, from the very unfavourable state of the weather, it was very thinly attended; the principal object of attraction was a series of electro-magnetic clocks, exhibited by Mr. Dent, a short time since, at the Royal Polytechnic Institution, Regent-street, London.

On Thursday the meeting for the determination of the various grants of money and recommendations was held, which terminated the business of the association for this year.

ESSAY ON THE ADVANTAGES OF SCIENTIFIC EDUCATION.

[FROM A CORRESPONDENT.]

One of the most striking differences which exists between the generality of the animal creation and mankind, is the long period which is required by the latter for the full development of the natural capacity of the mind. There are rare instances where this attribute of the animal race has been exhibited in the infancy of mankind, but it is then not any attribute to the race in general, but a mere solitary example of natural instinct. Nature has implanted certain powers in the animal frame, which are exerted when necessary requires; the young animal has no sooner seen the light of day than it exhibits all the capabilities of its nature, and natural instinct supplies the place of what, in the higher order of the creation, is the result of continual exemplification—that is, teaching in the period of infancy.

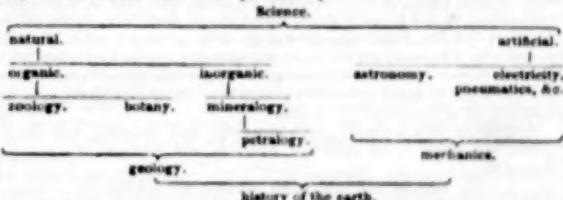
The young of animals are exposed to vicissitudes which the progeny of mankind rarely sustain, or to which they are rarely exposed; in the young lion we observe the same character as in the parent animal, and upon examination we find it results merely from the want of that solicitude which the parents of the human race exhibit towards their offspring—they guard it from harm, and supply its wants—but the animal race no sooner breathes than they are separated from the constant care of the mother, and instinct furnishes them with the necessary knowledge to apply for their self-preservation and protection those powers with which nature has invested them.

Mankind is elevated above the rest of the animal creation, then, by the superior mental powers with which the race is endowed—should we, therefore, neglect the study of Nature, and the examination of the state in which we live? both calculated to prove to our own minds the mental superiority we possess, and by the proper application of which we can alone fully estimate and appreciate the blessings of life. The lengthened youth, or period of mental incapacity which is characteristic of the progeny of mankind, is employed in the intuition of knowledge of various kinds, according to that occupation and station in life for which they are designed and in which they are born; but it is very clear that the knowledge of the station in which any individual ranks in the world is unknown to, or nearly hidden from, the individual himself, if the mind has not been prepared by study. If the barren mind has been left uncultivated, can it estimate the great powers which it is capable of employing, and can the exertions and struggles which it makes in life be directed in any proper sphere?

If we consider that the study known by the general name of Science implies the examination of many subjects, each calculated, not merely to convey information upon the particular point to which it relates, but to convince the mind of the power which science displays, whether simple or connected; if we consider that from the examination of one portion, the mind is literally forced to connect the other branches of this knowledge (for by practice and application we are alone enabled to find the difficulties which oppose the progress, and are convinced that the system is inseparable); and, lastly, if we consider the meditations which the study of science produces, we must confess that it is the most fit subject for enlarging the understanding, and conveying a knowledge of the Creation, in all its varied forms, to the "hidden recesses of the heart."

But the question which is evident upon each occasion where the advantages of science are discussed, is naturally "as to the method in which the study should be exemplified so as to avoid confusion," and how to prepare the mind gradually for those proofs which arise from the consideration of each subject. Science implies the study of Nature in all its various forms—not merely visible natural objects, but also the laws of the phenomena which we observe—it endeavours to convey the knowledge of nature and natural objects in general to the mind, by arranging all the facts and occurrences, in order to simplify the studies connected with them.

The whole study of Nature, whether of natural objects or of natural occurrences, tend, as I shall endeavour to show by the annexed table, to one grand point—the knowledge of the history of the world—and consequently of the changes it has undergone since the Creation, as well as of all visible objects and occurrences of the present day.



The relative position which each branch of general science occupies either as regards its importance or the order in which it should be studied, is hereby illustrated; and the combinations which are requisite for the particular subjects are demonstrated by the order in which they are placed. Thus we see that natural science is the study of the natural objects, which either exist or have existed upon the earth, whether organic or inorganic; on the contrary, the artificial, or, rather, *indirect* sciences, are the laws of the combinations of natural phenomena, whence result the theories upon which those phenomena are founded. Zoology and botany require no other foundation, separately, than a mere knowledge of the objects of scientific research; and mineralogy exists under the same laws, except on one point—i. e., that in order to become definitely acquainted with mineralogy, a knowledge of the simple substances of which the different aggregated minerals are compounded, is necessary—thus, the basis of mineralogy is chemistry. But when we regard geology in a practical manner, it appears in a very different light: in order fully to appreciate the value of the records which it unfolds, we must be acquainted with the simple branches of natural history—zoology, for fossil remains of animals—botany, for fossilised vegetable remains—mineralogy, for the constituents of the rocks themselves, or the study of petrology.

If we view the artificial sciences, we find that the same rule is applicable—that although there are simple subjects upon which the whole of the division rests, there are, nevertheless, others which cannot be understood without the knowledge of the primitive subjects. This we have fully illustrated in mechanics, where the laws of Nature, in all its forms, are combined.

Thus far I have shown the basis of geology and mechanics—how the student of geology must be acquainted with the simple natural sciences; but when that is acquired, and facts no longer occupy the attention of the mind, but are superseded by theory, we find how necessary is the knowledge of mechanics to determine the history of the earth. The whole course, thus illustrated, can be traced, step by step, by that person who is desirous of becoming acquainted with the history of the earth; for the student of Nature finds how the mind is carried from one simple subject to another, till it arrives at the grand conclusion—thus, that person who desires to investigate the history of the earth, reduces it into its connected parts, and reduces it to the simple sciences.

As regards the influence which scientific education has upon mankind, we leave this subject to the observer of human nature, he can trace where it has been properly applied by the visible effects; it is only to be regretted that such a subject does not hold a much more universal place in the education of youth; it is in these years when the vivacity of the mind is at the highest, that the love of science should be impressed, and, at the present age, when knowledge is rightly so much sought, it is doubly to be regretted that a branch which is most important for the advancement of the understanding, should be neglected; a knowledge of science may prove of essential importance in every station of life, whether the ob-

ject of the person tends to affairs in which pecuniary welfare or passing benefits are concerned, and if it does not directly add to the desired effect, it will indirectly and eventually prove essentially useful in many more cases than expected.

ORIGINAL CORRESPONDENCE.

ON THE PREVENTION OF SMOKE.

TO H. BULLOCK, ESQ.

SIR.—As a subscriber and constant reader of the *Mining Journal* I have noticed your letter in the Journal of the 31st July, and with pleasure beg to reply to your observations, urged so courteously, clearly, and practically, thanking you at the same time for the favourable notice which you have taken of my treatise on combustion. The three cases you put are—1st, Where the engine is not overweighted; 2d, Where there is plenty of boiler room; and, 3d, Where both the engine is overweighted and the boiler deficient. By this description, I understand (and you will correct me if in error), 1st, Where the engine is, in power, equal to the work required from it; 2d, Where the boiler, as to steam, is equal to the full power of the engine; and, 3d, Where neither the one nor the other are equal to the demands respectively made on them, and, consequently, a system of forcing is applied to both. In the first two instances, you are of opinion that "my plan will answer," while you doubt its efficiency when applied in that of the third.

"A given quantity of steam at a certain pressure," you observe, "is required in a given time; and your conclusion, or rather doubt, appears to have arisen from the alleged fact, that by the general use of "smoke-burning" plans this latter condition—viz., "the given time," has been sacrificed to the advantage of the combustion, or prevention of the smoke, so that, although smoke may have been prevented, and even an economy of fuel effected, the object, or interest, of a mill owner may remain unsatisfied, on account of the greater time, or diminished pressure of steam, which you have found to be the result of the application of those plans. As far as my experience goes, I have generally found the results to be just as you have described them, and it would not be difficult to explain the reason why such has been the case, were this the object before us. You have, however, reduced the question to so distinct, intelligible, and practical a point, that it is unnecessary to go further. You ask, "Can you, with your apparatus, boil off a given weight of water, with a given weight of fuel, in a given (shorter) time, than with any of the methods ordinarily in use?" I would observe, that there is another element of the inquiry you have omitted stating—viz., the description of boiler. I certainly will not undertake to say that I will, in a shorter time, by the aid of my apparatus, boil off a given weight of water, with a given weight of fuel, in one description of boiler, than you can in a different one; but if I am to understand your query to refer to the same boiler, then I answer your query distinctly in the affirmative, and undertake, in your words, that by the application of my apparatus I will boil off a given weight of water, with a given weight of fuel, in a shorter time in any ordinary boiler than could be effected by the same boiler, if set in the ordinary way. In fact, it could not be otherwise, if there be any truth in chemistry, seeing that a more perfect combustion must be accompanied by a more copious development of heat. I would here observe, that the measure of advantage to be derived by one boiler over another can only be in proportion to the degree of improvement of which such boiler may be susceptible. The variety, however, which prevails in the construction of boilers is so great, that it would be impossible (and I am sure you do not require it) that I should give an opinion on any one plan of boiler without knowing what it was, and particularly as many of the new and fanciful plans which have of late years been invented, are directly opposed to the natural processes of combustion, and are wholly unsuceptible of improvement. The real question, then, is, can a larger measure of heat be obtained from any given weight of fuel, by perfect combustion, without smoke, than by imperfect combustion, when accompanied by smoke? Here you will reply, that the question of time must also be taken into the account. But why should we suppose that any given quantity of fuel would require more time in being converted to heating purposes, under a perfect, than an imperfect system of combustion? Both practically and scientifically, my experience proves that it will require less time. It is alleged that, by "excessive firing," it is practicable to obtain the required quantity of heat and evaporation in the required time, and you have doubts whether the system I propose could produce the same results as this mode of forcing, or "excessive firing;" but I cannot see why you should give way to such doubts—*prima facie* reasoning would suggest that a system of "excessive firing," by which a larger quantity of coals would be employed, would only show a greater necessity for a more perfect system of combustion. The whole appears resolvable into this—Whatever be the volume of gases given off from coal in a furnace, whether it be by a slow system, or one of forcing and excessive firing, those gases may be made to give out a greater quantity of available heat by a more judicious mode of introducing air than is practicable by the ordinary method—and this goes to the very question put, for if there be more heat there should be more water evaporated. As to the "smoke-burning" expedients which have of late years been introduced, many of them are practically and chemically opposed to the conditions which nature demands in the process of combustion, and it is to remedy those defects that I have laboured.

It being impossible to reply to a query within the same space in which it is put, will, I trust be my apology for the length of this letter.

I remain, Sir, your's, &c.,

C. W. WILLIAMS.

ON THE APPLICATION OF WATER POWER BY REACTION.

TO THE EDITOR OF THE MINING JOURNAL.

SIR.—I observe in your paper of the 17th ult., in an article upon the "Application of Water Power by Reaction," it is stated that the power which propels Barker's mill is from the "reaction of the air and of the water acting against the horizontal jets." Now, I had always been under the impression that the resistance of the air was one of the two causes which forced a rotatory engine (which is on the same principle) to revolve, until Professor Partington delivered a course of three lectures in this town, on the steam-engine, in the course of which he stated that the atmospheric resistance had nothing whatever to do with the revolutions of the rotatory engine, which was caused solely by the equilibrium of the pressure in the arms being destroyed, by opening an aperture on one side of the tube, through which the water might rush, thus removing the pressure on that side of the arm next the aperture, it being still maintained on the opposite side, by which means the apparatus was sent round; and this was proved, he said, by the fact of the rotatory engine acting with equal, or even greater, facility in a vacuum formed by an air-pump. Now, this does prove clearly that "the reaction of the air" has nothing to do with the revolutions of the mill, which, if I apprehend rightly, is moved by the equilibrium of the pressure on the inner surface being destroyed and thrown mostly upon one side.

I should feel greatly obliged by your noticing this subject at your earliest convenience, and stating whether the resistance of the atmosphere has or has not any influence upon the motion of Barker's mill or upon the rotatory engine.

I remain, Sir, your's, &c.,

W. D.

CLARIDGE'S PATENT ASPHALTE COMPANY.

TO THE EDITOR OF THE MINING JOURNAL.

SIR.—Can you, or any of your readers, inform me if Claridge's Asphalte Company is still in existence, and, if so, why the directors do not give the shareholders some account of their proceedings? Surely, we, after having subscribed our money to bring the project fairly before the public, are entitled to have some account laid before us (once a year at least). It is now upwards of three years since the company was first formed, and, during the whole of that time, not one meeting have they called, to give us any statement whatever. This, Sir, I consider too bad from any set of men that has any pretensions to honesty—more so from such men as Messrs. Blount, Darvel, Phipson, and Co., who, I believe, form the direction in this said company. Perhaps they will say they have no statement to make—that their business is

THE CORNISH ENGINES.

TO THE EDITOR OF THE MECHANICS' MAGAZINE.

Sir.—The surplus duty performed by the Cornish single-action pumping-engine, over and above the apparent steam pressure on the piston, in comparison with the water load in the pit, is a subject that has been discussed and commented on frequently in your Magazine, and by very able writers; nevertheless, there continues to exist great diversity of opinion on this interesting topic. We may, therefore, be justified in concluding, that the excess of duty performed is not attributable to any pet theory, nor does it arise from one specific cause, but is brought about by a combination of circumstances happily applied to this magnificent machine. These circumstantial causes may fairly be described as follows:—1st, The judicious clothing which the cylinder, boilers, and steam-pipes receive, and the admirable nursing of the motive power throughout all parts of the engine; the saving of fuel occasioned by these precautionary measures is great indeed. 2d, The "perverse" action alleged by Mr. Josiah Parkes, as taking place instantly on opening the communication between the cylinder and boiler to admit steam at a high pressure; this, unquestionably, is one of the great acting causes, and will partly account for the seeming discrepancy between the power applied and the duty performed by these engines, as the piston receives such a sledge-hammer blow from the "perverse" force of the steam, that it does not recover itself until nearly the whole of the stroke is performed, when the expansibility of the steam diminishes that which the percussion commences; and as the steam attenuates itself at the close of the stroke to a force acting so feebly as to be scarcely appreciable, it will account for the admirable condensation which afterwards takes place. 3d, The almost perfect cylinder exhaustion occasioned by the manner in which the steam is used. In many of these engines the steam valve scarcely opens half an inch, and not above a second of time is occupied in so doing, consequently, although the blow the piston receives is tremendous, still the quantity of steam admitted is not too great to prevent the almost perfect vacuum which follows. The cylinder being longer than those usually applied to double-acting engines of equal diameters, the internal capacity is of course greater, consequently more ample space is afforded the steam to expand; the result of such attenuation is an easy and almost instantaneous condensation. A long stroke in the cylinder enables the engine to obtain a corresponding length in the plunger poles and working barrels, but admirably modified by the adoption of the unequal beam, which eases the pit work; thus, with fewer number of strokes as much work can be raised, as with a short cylinder-engine making a greater number of strokes in the same period, whilst an immense advantage is gained, in ample time being afforded the engine for that perfect cylinder evacuation, which is thus shown to be another of the great acting causes of triumphant success in the single-action expansive engine.

Although these engines are not the invention of Cornwall, the remarkable duty they are now performing in the west of England, will warrant me in asserting that the Cornish engineers stand unrivalled in the unsilvering of deep mines.

I remain, Sir, your's, &c.,

LIONEL BROTON.

SCIENTIFIC INSTRUCTION TO ENGINE DRIVERS.—Our readers are aware, that some time since a school was opened at the Royal Polytechnic Institution, Regent-street, for the purpose of giving persons intending to be engine-drivers on railroads proper and scientific instruction, theoretical and practical, in the duties of their vocation. A public examination of the pupils was held on Wednesday evening by Mr. Gregory, the engineer of the Croydon Railway, in the presence of Mr. Maughan, the professor of chemistry and mechanical philosophy, under whose able instructions the pupils had been for the preceding four months. We were given to understand that several of these persons, upon entering the class, could scarcely work a common sum in arithmetic, and yet most of them readily answered questions put by Mr. Gregory during a severe examination, involving not only complicated calculations of mechanical powers, but the more recondite phenomena of science, such as atmospheric pressure, expansion, and hydrosphere. We were much gratified to observe the success that has already attended this most pell-mell experiment, and at once pleased and surprised at the rapid improvement of the pupils. The utility, and indeed the necessity, for giving a thorough practical education to persons engaged in the important and responsible duty of engine driving is so manifest, that it would be superfluous to enlarge upon it. We doubt not the time will soon arrive when no person will be employed in that capacity by the directors of railroads without a certificate of ability, signed by a competent professor.

HOW TO ENTER UPON A SCIENTIFIC PURSUIT.—In entering upon any scientific pursuit, one of the student's first endeavours ought to be to prepare his mind for the reception of truth, by dismissing or at least loosening his hold on, all such crude and hastily-adopted notions respecting the objects and relations he is about to examine, as may tend to embarrass or mislead him; and to strengthen himself, by something of an effort and a resolve, for the unprejudiced admission of any conclusion which shall appear to be supported by careful observation and logical argument, even should it prove of a nature adverse to notions he may have previously formed for himself, or taken up, without examination, on the credit of others. Such an effort is, in fact, a commencement of that intellectual discipline which forms one of the most important ends of all science. It is the first movement of approach towards that state of mental purity which alone can fit us for a full and steady perception of moral beauty as well as physical adaptation. It is the "euphrasy and ruse" with which we must "purge one sight" before we can receive and comprehend, as they are the ligaments of truth and nature.—Sir J. Herschel.

INSTRUCTIVE GEOLOGICAL DISCOVERY.—A few days since, some workmen employed in raising stone from one of the fissile quarries, on Brockbridge-common, made a discovery, fourteen feet from the surface, of what they called "bones of a Saber," and of which they gave information to Mr. Duffield, of Tewkesbury, who immediately proceeded to the spot, and found it to be, on examination, the fossil remains of an ichthyosaurus, or fish lizard. Mr. Duffield, after much care, patience, and labour, succeeded in disintering it, had it safely conveyed to his house, and upon minute examination and careful cleaning, had the satisfaction to find that he had obtained one of the most beautiful and perfect fossil skeletons of this extraordinary antediluvian animal this country affords. This magnificient specimen measures 8 feet 10 inches in length, having the head, the whole of the spine, consisting of upwards of 100 vertebrae, with many of the spinal processes, and tail perfect, even to the smallest point, two of the pectoral or fins quite perfect, and a considerable portion of a third, both the scapulae, many of the ribs, and some very delicate small bones near the tail, which render it probable that the animal had an appendage there, probably used as a rudder, which will excite the interest and curiosity of those, as they have been hitherto unnoticed or undescribed.—*Cheltenham Chronicle*.

INTERESTING TO GEOLOGISTS.—On Monday last the workmen engaged in the stone quarry of Mr. Little, in the neighbourhood of St. Helen's, discovered two teeth, imbedded in the stone about fifteen feet below the surface of the earth; the bark of the tree was carbonized, and covered with perfect impressions of the leaves and branches of plants, &c. Two beautiful specimens were brought to our office yesterday by Mr. W. Brutherford, late of St. Helen's, now of Liverpool, who informs us that he has himself a good collection of fossils, calcarites, &c., taken out of the same quarry.—*Liverpool Mercury*.

GEOLICAL RESEARCHER.—Charles Lyell, F.R.S., Professor of Geology, &c., and one of the most distinguished scientific men of the present day, is expected in the next summer from England, for the purpose of making a geological tour through Nova Scotia and New Brunswick.—*New York paper*.—The celebrated geologist, Baron Leopold von Buch, is now again travelling through Sweden.—*Stockholm Journal*.

RAPID TRAVELLING BETWEEN LONDON AND DUBLIN.—The Government, in order to make the travelling between London and Dublin more comfortable, has given orders that a mail boat shall proceed to Dublin immediately on the arrival of the mail boat from London by the Chester and Birkenhead Railway. Persons desirous of availing themselves of this advantage can do so by proceeding by the London and Birmingham Railway to Birmingham, booking at Birmingham for the Great Junction Railway at Chester, thence to Birkenhead by the Chester and Birkenhead Railway, thus accompanying the mail-boats the whole way. The expense is similar to the more circuitous route by Liverpool, and a saving of twelve hours is, in many instances, made in the journey by the Government arrangement, occupying, on the whole, not more than twenty hours between London and Dublin.

PROCEEDINGS OF PUBLIC COMPANIES.

LONDON AND COUNTY BANKING COMPANY.

The half-yearly general meeting of the proprietors in the above bank was held at the company's house, Lombard-street, on Thursday, the 5th inst.

E. COOPER, Esq., in the chair.

The SECRETARY (Mr. R. P. Nichols) having read the notice calling the meeting, the CHAIRMAN, previous to the report being read, wished, as, from the bad state of the times, several reports had been in circulation, to show that the progress of the bank had been steady and satisfactory. He had a paper before him, which would give the progressive increase of capital, number of customers, and amount of balances:—

	1838.	1839.	1840.	1841.
Capital	£29,610	£6,725	£7,455	£6,185
No. of customers	1,120	1,147	2,355	3,267
Amount of balances	£116,089	£200,566	£62,445	£78,214

With respect to the last year, the improvement was wholly on the old branches, no new ones having been established.

The report was then read—for which see our advertising columns.

Mr. SPENCER (magistrate of Gravesend) moved, and Mr. OXFORD (of Croydon) seconded—"That the report be received, adopted, printed, and circulated amongst the proprietors"—which was carried unanimously.

The Rev. Mr. JAMES (of Woolwich) thought that, if the ice were broken, those shareholders who might have anything on their minds might be induced to come forward with it, and get the required explanation—the *bond fide* character of the proceedings of the company rendered necessary unnecessary on the part of the directors; they had always invited the fullest investigation, and felt assured that it was the only way to secure the confidence of the proprietors. He, as one of the auditors, could not pass over this opportunity of stating, that he had never known accounts kept with such perfect order and clearness as those of the company were at present. The directors, in the arduous duties of the auditors, had given every facility for the fullest investigation, and the vouchers that had been produced were of a most satisfactory description; this being the state of affairs, the auditors were fully prepared to answer any questions that the proprietors might choose to put to them. They, in the course of their duties, had noticed the progressive improvement of their affairs, and it must be a matter of congratulation to the proprietors to know, that, notwithstanding what he must call the malicious opposition they had had to contend against, the bank had attained such a degree of strength as now to be fully established in the confidence of the public. Reference had been made in the directors' report to the unexpected and unexplained absence of their manager, Mr. Dighton; he felt bound to state, that it had not been occasioned by anything that concerned the bank, his accounts had been fully investigated, and were found to be perfectly correct; there was nothing at all in his absence that in the least affected his character, which was unimpeachable. He had with regret noticed the deep distress which had apparently weighed him down, and feared that the arduous duties of his situation had, in a degree, thrown his mind off its balance. There was nothing in his absence deserving of blame, but much cause for consideration and sympathy.

Mr. OSBORN (of Leyton) begged to remind the directors that a serious duty devolved upon them in the choice of a manager to succeed Mr. Dighton; he trusted that no person connected with the company would be chosen to fill that responsible situation, and that the directors would only choose a person who had been a banker for at least ten years; there were persons in the establishment who were not bankers, which he thought was improper.

The CHAIRMAN replied, that Mr. Osborn's remarks should have due weight in their selection; they had advertised for a successor to Mr. Dighton, and had received letters from several gentlemen—when sufficient time had elapsed they would proceed to the election; it was true that there were officers in their employ who were not bankers, but Mr. Osborn must recollect that they could not get such parties as he spoke off to fill minor situations, and, besides, they must train up future bankers; he could state that every officer in their employ was most zealous, active, and anxious for the prosperity of the bank; with respect to Mr. Dighton, as soon as he heard of his unaccountable absence he felt that the property of the bank was safe, still the directors did their duty, and closely investigated the accounts; his private affairs, and not any defalcation or want of integrity, were the cause of his absence. It was most satisfactory to see the progress that the bank had made; the amount of the balances showed the increasing confidence of the public, and their establishment bids fair to rival those that had been much longer established.

Mr. OSBORN begged to state that his observations did not infer that Mr. Dighton was appointed by any partiality of the board.—The CHAIRMAN replied, that he did not misunderstand him, and felt obliged for his suggestions.

Mr. DICKINSON wished to know if ample security was had with the officers?—The CHAIRMAN said that they had a bond for a very large amount with Mr. Dighton, and signed by four responsible persons—indeed, with all their officers a larger security was demanded than in most other companies; he had heard it stated that a report had been circulated, to the effect that Mr. Dighton might well go, as he had such a set of directors to deal with; he could state that no manager and board of directors could have conducted business with more good temper and mutual esteem than did Mr. Dighton and the directors of this bank—they had never been the least display of temper on either side.

A dividend of 5 per cent. per annum was then declared, and thanks having been expressed to the chairman, directors, and manager, the meeting separated.

BIRMINGHAM AND MIDLAND BANK.

The annual general meeting of the shareholders of the above bank was held at Waterloo-rooms, on Wednesday, the 4th inst., when a dividend of 4 per cent. for the half year ending June was declared, and the thanks of the meeting were given to the directors, and Mr. Gough, the manager, for their attention to their respective duties. It appeared from the directors' report that there was a clear net profit on the year's business of £60,112. 12s. 6d., which would leave for the guarantee fund £68,112. 12s. 6d., after paying the dividend of 4 per cent. for the two half-years, with which addition the guarantee fund will amount to £17,451. 17s. 6d., being about 35 per cent. on the paid-up capital of £50,000. For five years since the commencement of the bank the net profits, excluding £6,000, received as premiums on shares have yielded an average of 12 per cent. on the present capital. The report concluded by stating that the shareholders might not only rely upon the continuance of this prosperity, but entertain a reasonable hope that it would be increased.

LEEDS AND SELBY RAILWAY COMPANY.

The half-yearly general meeting of the proprietors in the above company was held at New-borough's Hotel, Leeds, on Monday week.

DAVID WILLIAMS NEEL, Esq., in the chair.

The advertisement convening the meeting having been read, Mr. J. ATKINSON (the law-clerk of the company) read the report of the directors, which announced that the management of the affairs of the company for 31 years had been placed in the hands of the York and North Midland Company, who had accepted a lease at a fixed rental of £7,000 per annum, with power to purchase at the original cost, which would be equivalent to the payment of interest on the borrowed capital, and a dividend of 5 per cent. per annum on the shares. The necessary Act had been obtained, and it only remained for the shareholders to give their legal sanction to the agreement. The accounts for the last half-year showed a balance of £32,000, from which the directors recommended a dividend to be paid of £1. 10s. per share for the half-year ending June 30, 1841.—The report having been adopted, the lease was read to the meeting. A resolution confirming the agreement was agreed to, and the dividend was declared to be payable on the 17th August, the balance being set off to be paid out at interest to accumulate, at the end of thirty-one years in form a fund to ensure the independence of the railway at the expiration of the lease.

BOLTON AND PRESTON RAILWAY COMPANY.

The half-yearly general meeting of the proprietors of this company was held on Tuesday evening, at the Sans Hotel, Bolton.

JOHN HARRIS BROWN, Esq., in the chair.

P. S. SCHAFF, Esq. (the secretary) read the report of the directors, and the account of receipts and disbursements; and A. J. ASH, Esq., engineer, read his report on the state of the works. Since the partial opening of the railway, on the 4th of February last to the 30th of June, the total number of passengers conveyed by the company amounted to 27,719, of whom 23,504 were railway passengers, and the total amount received for passengers and parcels was £3,971. 10s. 6d. Thus the directors say, a satisfactory, and tends to confirm the belief which they have ever confidently entertained, that there would ultimately be extensive business in passengers, as well as in coal and merchandise upon this line.

After a discussion on the general affairs of the company, J. LLOYD, Esq. of Wigan, moved the adoption of the report, which was seconded by A. H. GROVES, Esq. (of Manchester), and carried unanimously.—The meeting then broke up.

ALDERMAN HUMPHERY AND THE BLACKWALL RAILWAY.

TO THE EDITOR OF THE MORNING CHRONICLE.

SIR.—Although I am reluctant to break through the reserve imposed on me by the determination of the Blackwall Railway board to avoid newspaper controversy, and await an early opportunity [on Thursday, the 19th August instant] that will be afforded to the directors of submitting every portion of their proceedings to the scrutiny of their proprietors, I cannot, after the most careful consideration, refrain from noticing some part of Mr. Humphery's letter, in which my name is introduced. Those who heard me at the meeting when Mr. Humphery's conduct was discussed, will readily acquit me of having acted a "jeu-saint" part. My opinion on Mr. Remond's resolution was given in terms that admitted of no misconception. No pretences of friendship were put forward, no hypocritical anxiety for Mr. Humphery's reputation stated, but simply a desire expressed that in a matter vitally affecting the character of a public man, so severe a resolution should not be ineffectually or hasty adopted. On these grounds I urged, but ineffectually, that the motion should be withdrawn. The meeting finally adopted Mr. Remond's resolution, in a somewhat modified form. The statement of Mr. Humphery, who admits having sold shares he did not possess, will enable all persons to judge whether the decision of the meeting was or was not justified by the actual circumstances of the case. Having entered on the subject of Mr. Humphery's letter, I hope I shall not be considered infringing on the injurious interests of the board, when I state that, so far from shares having been forfeited, since the time I became a director to the day of the meeting no shares whatever have been forfeited—that the calls due on that day were inconsiderable in amount, and that no calls were due from any director. I may further, in justice to myself and others, state that the necessary supplies to meet the current expenses of the undertaking were during a considerable interval furnished on the credit, responsibility, and influence of a portion of the direction. I believe I may fearlessly add, that no individuals ever made greater personal efforts for the credit, character, and success of a public undertaking, than those entrusted with the management of the Blackwall Railway. That their conduct on all occasions has been characterized by an earnest desire to forward its prospects, and by the most zealous and honourable exertions to promote the important interests committed to their care.

I have the honour to be, your most obedient servant,
Broom-hill, July 30.

DAVID SALOMON.

THE COAL TRADE.

FURTHER PROCEEDINGS AT SUNDERLAND.

A public meeting was held in the Exchange-buildings, Sunderland, yesterday week, to receive the report of a deputation appointed to meet the coal-owners of the river Wear, on the depressed state of the coal trade. The meeting was numerously attended by the shipowners and merchants of the port. Messrs. Wilson, Moon, Tanner, and Scarfield, the deputation appointed, communicated to the meeting the particulars of their interview with the coal-owners. The substance of the communication was as follows:—The coal-owners refused to lower the price of coals, and when the inadequate remuneration received by the shipowner was mentioned, it was found that the price of Sunderland coals had risen to 21s. 6d.—2s. higher than when the meeting was held. The coal-owners objected to freighting vessels, and suggested that so many vessels going up to London at the end of each month, and obtaining their clearances at the beginning, tended to depress the market, and that sufficient pains were not taken by the factors in the sale of the coals. In answer to a question by Mr. Wilson, whether they would watch the price of coals in the London market, and when they fell below the price at which the shipowners could afford to sell them, restrict the vends; the coal-owners replied that they had a strong wish to do so, and begged that the shipowners would keep up a communication with them on the subject. A long discussion then arose as to the propriety of further urging on the coal-owners the adoption of the freighting system, the lowering of the price of coals, or the restriction of the vends when the price of coals was below a certain amount. Objections were urged to each of these plans; with respect to the former, it was said that a large number of vessels, laden with best coals, going into the market, and having only a limited time to discharge, would overstock the market, and either lower the price of the coals, or compel the coal-owners to pay a demurrage, which would, of course, reduce the freights. With respect to the second proposal, it was urged that every decrease in London; and with respect to the cost, it was said that the coal-owners and shipowners of the north combined could not control the price of coal in London, as coals were now sent from Wales and the interior of the country, and the restriction of vend in the north, and the keeping back of sales in London, only had the effect of throwing an additional quantity of inferior coals into the market, and thereby diminishing the sale of the Wear coals. Great complaint was made at the conduct of the factors, who, it was alleged, had forced sales to the injury of the shipowners, under the mistake impression of the purport of a resolution passed on the 17th of July; and, after some observations to this effect, Mr. H. SCARFIELD moved "That in the passing of the resolution of that day, disapproving of the withholding of best coals, to the disadvantage of the port of Sunderland, it was not intended that the resolution should interfere with the factors in exercising a sound discretion for the benefit of their employers"; and the meeting regretted that, by interpreting the resolution literally, the factors should have fallen into the opposite extreme, and pressed sales unnecessarily, particularly on the preceding Monday." Mr. H. TANNER seconded this motion, which was opposed by Mr. W. NICHOLSON, who contended that by keeping back Sunderland coal for a high price, not only were the shipowners injured, but also the seamen and their wives and families. After some further discussion, the motion was negatived by a majority of one, a great number of gentlemen in the room not voting at all on the question. A conversation followed as to whether a return to the rotation system would be advisable, but no resolution was come to on the subject. The shipping interest is in a very depressed state in Sunderland, many vessels are laid up, and a greater number of seamen out of employment than has been the case for many years.

HUNTERFORD AND LAMBETH (PROPOSED) SUSPENSION BRIDGE.

This elegant chain or suspension bridge is in course of construction across the Thames, from Hungerford-market to Lambeth. The want of such a communication as this bridge will present has been generally acknowledged since the erection of Hungerford market, in the year 1833; shortly after, the plan was submitted to the public, a company formed, and an Act of Parliament obtained, authorising them to raise a capital of £10,000. for the purpose. The engineer of the bridge is Mr. I. K. Brunel, F.R.S., who is also executing a stupendous suspension bridge across the Avon, at Clifton. The design presents a handsome arched approach from each bank of the river, the road, or rather pathway, being suspended by iron chains from two stone piers in the Italian style. The architect to the company is Mr. J. B. Bunning, and the masonry has been contracted for at £3,000. by Mr. G. Chadwick. The iron work will be executed at the works of Messrs. Sandy and Co., in Croydon, at the estimated cost of £7,000. The weight will be 700 tons; the entire length 1,110 feet, divided as follows:—from each shore to pier, 370 feet; centre between piers, 670 feet; the viaduct will be twenty-eight feet above high-water mark, or three feet higher than the crown of the centre arch of Waterloo-bridge. The total cost of this bridge and approaches is estimated at £12,200. 7s.; and the estimated return, based upon the traffic of the existing bridges, is as follows:—

1. Ordinary traffic of a halfpenny each person is estimated at per an.	£6000
2. Traffic from Lambeth to the Hungerford-market.	200
3. Matches on the river, for the sight of which the bridge will be particularly adapted.	200
4. Estimated traffic to and from steam-boats.	200
5. Rent of unappropriated portion of the property already purchased.</td	

THE PROCESS OF BLASTING BY GALVANISM,
BY MARTIN J. ROBERTS, ESQ., F.R.S.E.

(Continued from p. 247.)

28. After having completed the series we find that the wire of the first zinc plate and the wire of the last copper plate are free—that is, unattached to any other plate; these terminal wires are called poles; that which is attached to the zinc plate may be called the negative or minus pole, because, if the two terminal wires be brought into contact, the electricity flows towards the zinc, proving the zinc plate to be in a minus or negative state; the terminal wire attached to the copper plate may be called the positive or plus pole, because, when the terminal wires are in contact, it gives out electricity to the zinc terminal wire, and is, therefore, in a plus or positive electrical state when compared with the wire of the zinc plate. It must be borne in mind, that a current of electricity is only demonstrated when these terminal wires or poles are in contact with each other, either directly, or by the intervention of some conducting body, such as a metal or a liquid that is a conductor of electricity.

29. In sections 21 and 27, diluted sulphuric acid is mentioned as the exciting solution, but Professor Daniell has introduced a great improvement, which is—the use of a solution of sulphate of copper (blue vitriol) to excite the plates. His apparatus is inconvenient for the practice of blasting, but the principle he has established is of great value, and I have succeeded in so far simplifying the apparatus, that it is not more difficult to manage, and occupies no more space, than an acid battery constructed on Dr. Woolaston's plan. The principle of the battery is this: a number of galvanic pairs (sections 21 and 22) are each immersed in a separate reservoir, containing an exciting solution, and our object must be to place these plates and reservoirs in as compact and portable a form as possible: earthen or glass jars, being fragile, are inadmissible as reservoirs, and they occupy much space. I, therefore, substitute for them a wooden box, divided into compartments by water-tight divisions, thus forming it into a number of cells or reservoirs of durable materials closely packed together. I recommend that the plates be seven inches square, and that ten pair be put in series; the box of reservoirs will therefore be made as follows:—

30. Let the wood be elm—deal may be substituted, but elm is better: the sides and ends of the box to be of half-inch plank, and its length fifteen inches from outside to outside, its width nine inches from outside to outside, and the same in depth: before the box is put together, cut nine grooves in the side planks to admit of the wooden partitions that divide the box into ten cells; these partitions may be made of thin plank, and each cell must be a little more than an inch wide and be eight inches long; the partitions, and also the joints of the box, are made water-tight by a cement, such as white lead; this must particularly be attended to, because if the liquid leak from one cell into another, a conducting communication is opened between them, which will very much diminish the action of the battery. When the box is put together, and the joints are well set, the whole of the inside should be washed over with some resinous cement—I have generally used a composition of three parts of resin to one of bees'-wax, but many other kinds will answer the same purpose—viz., that of perfectly insulating one cell from another: the principal properties requisite in the cement are that it be resinous, and, when cold, that it sets in a perfectly solid mass, at the same time it must not be brittle, but tough enough to bear any blows from the plates without chipping or peeling off; the higher the temperature it will bear without melting the better, for, if diluted sulphuric acid be used as an exciting liquid, a considerable degree of heat will be generated in the cells, and, should the cement melt by this heat, the perfect insulation of one cell from another will be destroyed. It has now been shown how ten reservoirs for the plates and liquid can be made in a compact and portable form.

31. I have said that the metallic plates of the battery should be seven inches square, and when the size of a galvanic pair is spoken of, it is the measure of the zinc or generating plate, but as every pair of this generating plate should have a conducting plate opposed to it, we must surround the zinc with a copper or conducting plate, and the zinc having two active surfaces, the copper plate will thus necessarily be something more than double the size of the zinc plate—in fact, the zinc plate will be enclosed in a copper box having neither bottom nor top.

32. Each pair is thus made:—A copper plate, seven inches wide and seven inches long, is bent into the form of a narrow box or case, without top or bottom; the joint is not soldered, but merely seamed or clasped together; to the top of this copper case solder a stout copper wire (size No. 10) about six inches long. We have now a copper box, seven inches deep, seven and a half inches long, and one inch wide. To a zinc plate, seven inches square, solder a wire similar to that fastened to the copper case. Let the zinc plate be covered carefully with a single layer of stout brown paper, and the joints, or seams, of this paper fastened down with wax or other resinous cement, in such a manner that no liquid can reach the zinc but through the tissue of the paper; the reasons of this I will explain in another place. Now, put this covered zinc plate into the copper case, and maintain it in the centre by small pieces of cork; the greatest care should be taken the zinc plate does not touch its surrounding copper, and also that the wires of these plates do not touch each other, for, if any metallic communication be effected between the zinc and copper plates of the same pair, the electricity of that pair will be entirely lost: it is well to round off the corners of the zinc plate to prevent them piercing the brown paper covering. We have now one galvanic pair—let ten of the same kind be made, and these ten pair might be placed in their reservoirs and joined in sequence, as described in section twenty seven; but to put them in singly, and then join the wires every time the battery is worked, is so tedious an operation, that it would render the apparatus practically useless; we must, therefore, place them joined in sequence in a frame of wood, they may then be simultaneously immersed in the reservoirs without any loss of time, and, when one blasting operation is finished, the plates can be easily lifted out of the exciting liquid, so as to prevent the waste of the liquid and of the zinc that would take place were the plates to remain in it when the action of the battery is not required.

33. The frame consists of three wooden bars joined together, and parallel to each other by cross ends; it must be fifteen inches long and nine inches wide, the bars to be each an inch and a half square—the use of this frame being to support the copper cases and zinc plates in such a position that all may be simultaneously dipped into the cells of the wooden box; saw cuts are made in the outer bars of the frame, into which the upper edges of the plates are to be inserted; these will, therefore, be three cuts for each pair, in each bar, two for the edges of the copper case, and one between them for the edge of the zinc plate: when the plates are thus fastened in the cuts or grooves, they will be retained in the centre of the cases, and the cases will also be kept by their grooves in a position, that all may fit easily, and at once, into the cells of the wooden box; the centre bar of the frame is to be pierced with holes, two for each pair of plates; through these holes the wires attached to the copper and zinc plates (section thirty-two) must be drawn—that is to say, one wire through each hole, great care being taken the wires of the same pair do not touch each other: the wires, when well fastened in these holes, which may be done by a wooden pin, will support the weight of the plates and prevent their slipping out of the saw cuts in the side bars of the frame.

34. The plates being fixed in the frame, the edges inserted into the saw cuts of the side bars, and their respective wires fastened in the holes of the centre bar, we may now attach the several pair in sequence or galvanic series, as described in section twenty-seven. Placing the frame before me, I take the wire of the zinc plate of the first pair, and bend it out of the way, to remain free—that is, unattached to any other plate; this wire we will call the negative pole, then I take the wire attached to the copper case of this pair, and also the wire of the zinc plate of the next or second pair, and twist them firmly together, being careful to maintain as perfect and extensive a metallic contact between the wires as possible; it might be well to rub them bright with a file or sand paper before they are twisted together: the wire of the copper case of the second pair may now be twisted in the same manner with the wire of the zinc plate of the third pair, the copper case of this pair fastened to the zinc of the fourth, and so until we arrive at the tenth or last pair, the wire of the zinc plate of this being fastened to the copper case wire of the ninth pair: we find that the wire of the copper case of the tenth pair is free, and there remains no zinc plate to which we can attach it, we, therefore, bend it outwards, and may call it the positive pole of the battery. Here, then, we have a galvanic battery complete for ordinary purposes—viz., ten cells or reservoirs to contain the exciting solution, ten pair of copper and zinc plates fastened together in galvanic series, and the positive and negative poles free to be applied to any substance we wish acted upon; these poles may be extended to a great length by adding copper wire to them, and the active powers of the battery may thus be conveyed to a considerable distance. For instance—suppose it is wished to burn a fine wire at a distance of fifty yards from the battery, add fifty yards of stout copper wire to the positive pole, to the end of this fasten the fine wire that is to be fused, and to this again attach fifty yards of stout copper wire, the free end of which is to be brought near the negative pole of the battery; now immerse the plates in the exciting solution contained in the box of cells, and bring the free end of the stout copper wire into contact with the negative pole, the electric fluid instantly circulates from the positive pole through the stout copper wire, then through the fine wire (fusing it), and back through the stout copper wire in contact with the negative pole.

35. Such is the action of the battery, and it will be observed that no effect takes place until the poles are in communication with each other: in this instance (when the free end of the stout copper wire is brought into contact with the negative pole), through the medium of the long copper wires and of the fine wire, this contact might have been made by the hand, as the operator would be in no danger from the fusion of the fine wire; but had this been immersed in a large quantity of gunpowder, it would not have been produced so much as fifty yards of the explosion; I have, therefore, contrived

an addition to the apparatus, whereby the poles are connected on pulling a string, and, as this may be of any required length, the operator can stand in perfect security.

36. A wooden upright, about nine inches long and two inches square, is fastened to each end of the frame (section 33), and a round wooden cross-bar, an inch in diameter, connects the tops of these uprights; a disk of tin, about three or four inches in diameter, and having a hole an inch in diameter in its centre, is soldered to the wire attached to the zinc plate of the first pair (the negative pole); the disk is fastened to the upright at this end of the battery, the round cross-bar passing through the central hole, as the disk is in metallic connection with the zinc plate it may be called the negative pole, and if a wire attached to the positive pole is brought into contact with the disk the battery is put into action. Another tin disk, of similar size to that of the negative pole, must slide freely along the round cross-bar; the central aperture in this disk should be about an inch and a half in diameter, and to it a tin pipe, of the same diameter, and about two inches in length, is fixed; this is to be on one side only of the disk, and must project towards the positive pole of the battery; the use of the pipe is to keep the moveable disk steady during its motion along the bar; it must not project on both sides of the moveable disk, because it is necessary that the surfaces of the disks be in perfect contact with each other when the battery is in action.

37. Now, if a wire, connected with the positive pole, be fastened to the moveable disk, and this disk be then moved along the cross-bar until it be in contact with the fixed disk, the battery is in action, because there is a metallic communication from one pole to the other (sections 34 and 35). To enable an operator standing at a distance from the battery to bring these disks into contact, a string is fastened to the moveable disk and reeved through two holes bored in the fixed disk, the two ends are tied together about a foot behind the fixed disk, it thus forms a span or double cord proceeding from the moveable disk; to this span is tied a string of any convenient length, which we will call the "lanyard;" the end of this lanyard is carried to some place where the operator will be in safety, and on pulling it, the moveable disk slides along the cross-bar into close contact with the fixed disk, and the battery is thus put into action.

38. But some contrivance must be provided to prevent the disks touching each other before the lanyard is pulled, and this we effect by fastening one end of the span or double cord to the pipe of the sliding disk a spiral wire (such as a bell spring), which must encircle the cross-bar, and have one end fixed to the wooden upright on the positive side of the battery, the length of the spring, when unextended, to be such, that the moveable disk attached to it shall stand about seven inches from the fixed disk, but when the lanyard is pulled, the spring extends, and the disks come in contact with each other, and if the lanyard be slackened, the spring separates the two disks, the action of the battery is stopped, and there is no danger in approaching the charge of gunpowder, should it not have exploded when the electricity circulated through the fine wire.

39. To prevent a possibility of the disks touching each other before the workmen are prepared for the explosion, a wooden pin is placed between them; this is inserted into a hole bored through the cross-bar, about midway between the disks, it will thus prevent the sliding disk being moved into contact with the other; but when all is prepared for firing the charge, this pin, which we call the "safety pin," must be removed from the hole before the lanyard is pulled.

40. Allusion has been made (section 29) to Professor Daniell's discovery of the advantage gained by the use of sulphate of copper dissolved in water as the exciting liquid in a galvanic battery: this discovery is of great importance, and the progress of electrical science has been more facilitated by it than by any since the days of Sir H. Davy. Before the introduction of the use of a solution of sulphate of copper, diluted sulphuric acid, nitric, or muriatic acid was the liquid employed to excite the plates, to which there are many objections, for the power of the battery speedily declines, much unpleasant gas is emitted, and, in consequence of the adhesion of gas to the surface of the plates, a great portion of electric fluid that would otherwise have been circulated is lost; but, when sulphate of copper in solution is used, no gas escapes, and a powerful action of the battery is sustained, with out diminution, for a considerable time. Sulphate of copper is a combination of sulphuric acid and oxide of copper, and, when a galvanic pair is immersed in a solution of it, the sulphuric acid, having a greater affinity or attraction for the zinc plate than for the copper with which the acid is combined, abandons this copper and adheres upon the zinc, while the liberated copper is precipitated upon the copper plate of the galvanic pair. As this pamphlet is not intended to be an essay on galvanism, it would be misplaced to enter into an explanation of the cause of this phenomenon, it may be sufficient to state as an axiom, that in the decomposition of a metallic salt by galvanism, the acid goes to the positive plate, and the base to the negative. In the case of a solution of sulphate of copper decomposed by a galvanic pair, the acid goes to the zinc, which is the positive plate, while the base (that is, the copper) is deposited upon the negative or copper plate of the galvanic pair; but, the zinc plate, not being of a homogeneous surface, some parts of it are more easily acted on than others by the acid—positive and negative points exist upon the plate itself, and, consequently, metallic copper is precipitated upon these negative points. This much diminishes the power of the battery, and to prevent the precipitation, Professor Daniell surrounds his zinc plates with an envelope or bag, made of bladder or other animal membrane, or sometimes with a tube of porous earthenware; between this covering and the zinc the diluted sulphuric acid is poured, and, on the other side of the covering, between it and the copper plate, is a solution of sulphate of copper: this arrangement is troublesome, and, by many experiments, I have found it can be dispensed with, and I have substituted the much simpler one of covering the zinc with brown paper, taking care to cement the edges or joints of the covering with wax, in such a manner that no liquid can penetrate to the zinc without having first passed through the tissue of the paper. The zinc being thus closely covered, the solution of sulphate of copper is poured on the outside—that is, between the paper covering and the copper plate; the paper will prevent any deposition of copper upon the zinc plate, and this simple arrangement saves much trouble and expense, and has the capital advantage of enabling us to place the zinc and copper plates of the several pair much nearer to each other than can be done in Professor Daniell's arrangement: this increases in a great degree the power of the battery, and at the same time renders the arrangement cheap and portable.

42. If an intense action of the battery be required, sulphuric acid should be added to the solution of sulphate of copper; the quantity need not be large—about four ounces of strong acid to all the liquid in the ten cells will be sufficient. It was once thought the action of the battery could be sustained unimpaired for a considerable time by maintaining a supply of crystals of sulphate of copper in the solution, but, in practice, rather than to attempt this, it will be found better to exhaust one charge of liquid, throw it away when exhausted, and replace it by a fresh solution of sulphate of copper. Thus, then, it has been shown that water saturated with sulphate of copper is the best exciting solution, and, if a very powerful action be required, the addition of a little sulphuric acid will effect it. After the operations of blasting are over for the day, it will be well to plunge the plates into a tub of water for half an hour; this will prevent any waste of zinc by the action of any sulphuric acid that may have adhered to it, and will also dissolve and wash away any sulphate of zinc that may remain upon the plate. It is not necessary to take the solution from the reservoirs until the liquid is too far exhausted to be of any further use: when it is thrown away wash the cells carefully with clean water, to remove any metal that may be precipitated at the bottom. We may now describe the long conducting wire (section 34), and explain the method of fixing it to the battery.

43. This wire must be as thick as is consistent with facility of manipulation, because metal conducts electricity in proportion to the section of the conductor, and inversely in the proportion of its length—that is to say, a wire, having twice the sectional area of a wire, and half its length, will transmit four times as much electricity, because it has twice its mass in a given length, and offers but half the distance for the electric fluid to run through; therefore, whenever a channel or conductor is used for the transmission of electricity, it must be of as great a section and as short in length as will be found practicable, for much of the electric fluid is thus saved. In the practice of blasting the conducting wire should be of copper, and about one-eighth of an inch in diameter; its length must, of course, vary according to circumstances, but, in general, if the battery be placed twenty or thirty yards from the rock to be blown up, it will be in perfect safety: the operator should stand at a greater distance, or be protected by a mass of rock, he having only to pull a string, which may be of any length.

44. If the battery is to be thirty yards from the explosion, sixty yards of stout copper wire will be required, as the electricity circulates from the positive pole of the battery through one stout wire to the fine wire in the rock, and back again through a similar wire to the negative pole; the stout yards must be covered with cotton thread, and it can be purchased covered, at about £1 per lb., at Mr. Clarke's, philosophical instrument maker, Strand, London: it is better to lay it in this state than attempt to cover it, because this is sold in covered by machinery, and better than it can be done by hand. The object of covering the wire with cotton is to insulate it—that is, to prevent the electricity passing the wire; for cotton thread is a non-conductor of electricity of such low tension as that produced by the galvanic battery, and will effectively prevent any of the fluid passing from one wire to the other should they be in contact, and it will also insulate the wire from the ground. It will be well to cover the cotton thread with a coating of sealing-wax—this can be done by painting the covered wire with the sealing-wax, and also prevent the cotton being shaved, or rubbed off, by mechanical blows or friction.

45. Take the sixty yards of copper wire covered with cotton and sealing-wax varnish, cut it in half, and lay the two lengths of thirty yards each side

by side, and bind them together with twine, nearly in the same manner as each wire is covered with cotton, but the cord may be put upon the double wire by hand—it should be stout hard twine, and the several turns of the coil kept closely in contact with each other; the wires are covered with cord to keep them together, thus facilitating the operation of blasting, and it also preserves the wires from injury by any portions of the torn rock that may fall upon them. As an additional security, this double wire covered with twine may be painted with sealing-wax varnish; the cost and labour of the whole covering is but trifling, and, if well done, the wires will last for years, allow about a foot in length of the ends of these wires to be free—that is, not bound together in the manner the rest of their length has been.

46. We have now a kind of rope thirty yards long, consisting of two wires bound together, and the four ends projecting; take one end of this rope, and fasten its two projecting ends to the galvanic battery in the following manner:—Solder one projecting end to the sliding tin disk, and the other projecting end (of the same extremity of the rope) to the wire attached to the positive pole of the battery; the wire rope must be permanently fixed in this manner—in fact, it thus forms a part of the battery, and we will call it the "conducting wire;" when not extended for use, it may be coiled up, or wound upon a reel.

47. Let us suppose the conducting wire extended, two of its projecting ends fixed to the battery, and let the other ends be connected by a few inches of fine wire; let us also suppose the plates immersed in the exciting liquid (section 42). If the lanyard (section 37) be pulled, the sliding tin disk (section 36) moves forward into contact with the fixed disk or negative pole, the electricity circulates from the positive pole through one part of the conducting wire, then through the fine wire (fusing it) back through the other part of the conducting wire to the sliding disk, and from this to the fixed disk, which is the negative pole of the battery.

(To be concluded in our next.)

RAILWAY SHARE LIST AND TRAFFIC RETURNS.

Line.	Entire Lgth.	Now Open.	Present ac- tual cost.	pd. on Share.	Val. of Share.	Last week's Returns.
Arbroath and Forfar Railway	12	13	47,181,645	25	25	184 3 5
Birmingham and Derby Joint	48	384	850,044	100	40	1488 12 8
Birmingham and Gloucester	48	282	1,012,725	100	40	234 14 1
Chester and Birkenhead	18	15	450,004	30	30	673 13 4
Dundee and Arbroath	169	15	154,004	25	25	348 2 2
Eastern Counties	126	179	1,726,170	25	22	242 16 9
Glasgow and Ayr	61	48	580,045	40	30	1285 7 6
Glasgow and Paisley Joint	53	70	20,000	25	25	1007 7 3
Grand Junction	974	371	1,055,000	100	21	1004 8 8
Great North of England	75	48	1,000,000	90	90	147 11 2
Great Western	117	91	3,289,044	95	94 24	14000 18 3
Great and Bony	51	21	400,000	60	50	441 7 8
Lancaster & Preston Joint	202	204	380,000	40	32	485 11 1
Liverpool and Manchester	31	31	1,410,000	100	100	1868 16 1
London and Birmingham	1123	1125	5,734,007	90	100	1868 16 1
London and Blackwall	33	37	367,000	25	15	1000 18 4
London and Brighton	486	416	1,091,000	90	42	165 16 5
London and Croydon	104	106	527,000	15	15	786 12 7
London and Greenwich	32	32	730,000	20	20	874 10 2
London and South-Western	93	72	2,282,007	90	82	7007 7 100
Manchester, Bolton, & Bury	16	10	770,000	20	20	567 2 1
Manchester & Birmingham	45	5	1,107,012	40	24	387 10 9
Manchester and Leeds	20	10	2,022,000	70	60	2070 9 2
Midland Counties	57	57	14,000,000	100		

